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FILE 'HCAPLUS' ENTERED AT 16:32:42 ON 31 AUG 2006  
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(FILE 'HOME' ENTERED AT 12:56:23 ON 31 AUG 2006)

FILE 'HCAPLUS' ENTERED AT 12:56:34 ON 31 AUG 2006

E US20040081887/PN

L1 1 SEA US20040081887/PN

FILE 'REGISTRY' ENTERED AT 12:58:10 ON 31 AUG 2006

L2 5 SEA (12031-65-1/BI OR 12162-79-7/BI OR 12190-79-3/BI OR  
7440-44-0/BI OR 7782-42-5/BI)

FILE 'HCAPLUS' ENTERED AT 14:08:36 ON 31 AUG 2006

L3 238861 SEA BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?  
OR GALVAN? OR WET OR DRY OR PRIMARY OR SECONDARY) (2A) (CEL  
L OR CELLS)

L4 474885 SEA ELECTROLY?

L5 436653 SEA LAMIN? OR LAMEL? OR MULTILAYER? OR MULTI(W)LAYER?

L6 46153 SEA (MULTI OR MULTIPLE OR PLURAL? OR SEVERAL?) (2A) (LAYER?  
OR COAT? OR FILM? OR SHEET? OR LEAF?)

L7 875071 SEA ELECTROD## OR CATHOD## OR ANOD##

L8 475301 SEA HOUSING? OR CASING? OR SHROUD? OR JACKET? OR WRAP?  
OR PACK? OR ENCASING? OR SHEATH?

L9 108176 SEA L3 AND L4

L10 10715 SEA (L5 OR L6) (3A)L7

L11 1280 SEA L9 AND L10

L12 21603 SEA (LEAD OR PB) (2A)L7

L13 38 SEA L11 AND L12

L14 919560 SEA PROTRUD? OR PROTRUS? OR PROTUBERAT? OR PROJECT? OR  
EXTEND? OR EXTENS? OR STICK###(W)OUT

L15 6 SEA L13 AND L14

L16 7066 SEA L14(3A)L7

L17 3276 SEA L14(3A)L8

L18 1320 SEA (L16 OR L17) AND L3

L19 58 SEA L18 AND L10

L20 27 SEA L19 AND L4

L21 10 SEA (L19 OR L20) AND L12

L22 14 SEA L15 OR L21

L23 25 SEA L20 NOT L22

=> d l22 ibib abs hitstr hitind 1-14

L22 ANSWER 1 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:601122 HCAPLUS

TITLE: Flat condition group electric **battery**  
and its production method [Machine Translation].

INVENTOR(S): Ibuki, Noritaka; Nakayama, Yoshihiko

PATENT ASSIGNEE(S): Aoi Electrínics Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006164863	A2	20060622	JP 2004-357643	20041210
PRIORITY APPLN. INFO.:				20041210

AB [Machine Translation of Descriptors]. Offer of the laminating type group electric **battery** which possesses the structure which by the fact that manufacturing process in order large to increase capacity the electric **battery** is automated, makes that it makes cheap in comparison production cost with until recently possible, furthermore is strong in the power from outside. The unit cell of the flat condition which possesses positive **electrode lead/read** and **cathode lead/read** plural in the flat condition group electric **battery** which is laminated in thickness direction, as for each unit cell, from the position where the top of the identical side differs the aforementioned positive **electrode lead/read** and **cathode lead/read** extending the flat condition group electric **battery** which features that it comes out. From the position where the top of the identical side differs the unit cell of the flat condition which the aforementioned positive **electrode lead/read** and **cathode lead/read** extending is put out in thickness direction plural the first process which is laminated, all positive **electrode leads/reads** and **cathode lead/read** production method of the flat condition group electric **battery** mounted body which consists of the second process which connects to the circuit baseplate directly electrically.

L22 ANSWER 2 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:182338 HCAPLUS  
 DOCUMENT NUMBER: 140:184824  
 TITLE: Laminate packaging flat cell of **battery** assembly  
 INVENTOR(S): Shimamura, Osamu; Abe, Takaaki; Ito, Takanori; Saito, Takamitsu; Horie, Hideaki; Sugawara, Hiroshi  
 PATENT ASSIGNEE(S): Nissan Motor Co., Ltd, Japan  
 SOURCE: U.S. Pat. Appl. Publ., 19 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004043289	A1	20040304	US 2003-645617	200308

EP 1453118 A2 20040901 EP 2003-15601

22

200307

15

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,  
SK

CN 1495934 A 20040512 CN 2003-155777

200309

02

PRIORITY APPLN. INFO.:

JP 2002-257867

A

200209

03

AB A laminate packaging flat cell comprises a laminate film formed by combining polymer and metal with each other; a power generating element formed of a plurality of electrode plates and separators, and hermetically sealed by the **laminate** film; and an **electrode** terminal **lead** coupled to the electrode plate. In the laminate packaging flat cell of the present invention, the power generating element is hermetically sealed by forming a thermally welded portion on an outer periphery of the **laminate** film, and the **electrode** terminal **lead protrudes** from the thermally welded portion, and a through-hole is provided in a position thereof contacting the thermally welded portion.

IC ICM H01M006-46

ICS H01M002-08; H01M002-30; H01M010-04

INCL 429162000; 429180000; 429184000; 429153000; 029623200; 029623400

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** assembly laminate packaging flat cell

IT Secondary **batteries**

(laminate packaging flat cell of **battery** assembly)

IT Packaging materials

(laminated films; laminate packaging flat cell of **battery** assembly)

IT Adhesives

(layers; laminate packaging flat cell of **battery** assembly)

IT 7440-44-0, Carbon, uses 12057-17-9, Lithium manganese oxide  
limn2o4

RL: DEV (Device component use); USES (Uses)

(laminate packaging flat cell of **battery** assembly)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 9003-07-0,  
Polypropylene

RL: TEM (Technical or engineered material use); USES (Uses)

(laminate packaging flat cell of **battery** assembly)

L22 ANSWER 3 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:949928 HCAPLUS

DOCUMENT NUMBER: 140:18387

TITLE: Secondary **battery** comprising  
**electrode** leads **extended**  
directly from **electrodes** and  
manufacture of the **battery**

INVENTOR(S): Itabashi, Toshiyuki

PATENT ASSIGNEE(S): Toyota Motor Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003346743	A2	20031205	JP 2002-149070	20020523
PRIORITY APPLN. INFO.:				20020523

AB Lead parts **extended** sep. from **anodes** and cathodes, which are resp. made of metal sheets and laminated so as to form an electrode unit of the secondary **battery**, are united by melting members, closely joined at prescribed positions to an air-tight casing for housing the electrode unit, and directly led out of the casing. The secondary **battery** is manufd. by forming the electrode unit by stacking a **plurality** of metal **sheets** of **anodes** and **cathodes** from which **lead parts** are resp. and directly **extended**; setting the melting members reciprocally between the neighboring metal sheets at prescribed positions of the lead parts; joining the metal sheets by the melting members by heating and pressurizing the prescribed positions of the lead parts by a die; setting the obtained electrode unit in an air-tight casing and caulking the lead parts and the casing at the prescribed positions; and filling the space between the electrode unit and the casing with a filling member. Since lead parts are directly **extended** from **electrode** unit to the outside of the casing, it is made unnecessary to weld the **lead parts** and **electrode** terminals and **lead** disconnection can therefore be avoided.

IC ICM H01M002-06

ICS H01M010-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery electrode lead**

**extension** disconnection prevention

IT **Battery anodes**

(lead direct **extension** from; secondary

**battery** comprising **laminated electrode**

metal sheets having directly extended lead parts)

IT **Battery cathodes**

(leads direct **extended** from; secondary **battery**

comprising **laminated electrode** metal sheets

having directly extended lead parts)

IT **Secondary batteries**

(secondary **battery** comprising **laminated**

**electrode** metal sheets having directly extended lead parts)

L22 ANSWER 4 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:734240 HCAPLUS

DOCUMENT NUMBER: 137:281807

TITLE: **Battery electrode** sealing

film and **laminated battery**

packaging material using the film

INVENTOR(S): Yamashita, Rikiya; Okushita, Masataka; Yamada, Kazuki

PATENT ASSIGNEE(S): Dai Nippon Printing Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002279947	A2	20020927	JP 2001-78072	20010319
PRIORITY APPLN. INFO.:				20010319

AB The film, for sealing between **electrode** leads **extended** from a laminated **battery** packaging material and the packaging material, is a crosslinked acid modified terpolymer having 5-80% gelation. The packaging material has a substrate, a binder layer, an Al foil, a formed layer, and a polyolefin resin hot seal layer, with the sealing film between the packaging material and electrode leads.

IC ICM H01M002-06  
 ICS B65D059-00; B65D065-40; B65D075-26; B65D085-86; C08J005-18; H01M002-02; H01M002-08; C08L023-26

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38

ST **battery** packaging material **electrode** lead sealing film; acid modified terpolymer **battery** **electrode** lead sealing film

IT **Battery electrodes**  
 Packaging materials  
 Sealing compositions  
 (laminated **battery** packaging materials contg. acid modified terpolymer films for sealing electrode leads)

IT Polyamides, uses  
 Polyesters, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (laminated **battery** packaging materials contg. acid modified terpolymer films for sealing electrode leads)

IT Polymers, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (ter-, acid-modified; laminated **battery** packaging materials contg. acid modified terpolymer films for sealing electrode leads)

IT 7429-90-5, Aluminum, uses 9003-07-0, Polypropylene 9003-07-0D, Polypropylene, unsatd. carboxylic acid modified  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (laminated **battery** packaging materials contg. acid modified terpolymer films for sealing electrode leads)

L22 ANSWER 5 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2002:734239 HCAPLUS  
 DOCUMENT NUMBER: 137:281806  
 TITLE: Sealing film for **battery** **electrode** lead and laminated **battery** packaging

INVENTOR(S): material using the film  
Yamashita, Rikiya; Okushita, Masataka; Yamada,  
Kazuki  
PATENT ASSIGNEE(S): Dai Nippon Printing Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2002279946	A2	20020927	JP 2001-77712	200103 19
PRIORITY APPLN. INFO.: JP 2001-77712				200103 19

AB The film, for sealing between a laminated battery packaging material and electrode lead extended outside a battery package, is a simultaneously extruded film of a mixt. contg. polypropylene and a polymer blend, contg. an unsatd. carboxylic acid grafted C<sub>2</sub>H<sub>4</sub>-C<sub>3</sub>H<sub>6</sub> copolymer, contg. 3-10% C<sub>2</sub>H<sub>4</sub>, and an C<sub>2</sub>H<sub>4</sub> copolymer, and is 5-80% gelled and crosslinked. The battery packaging material has a substrate, a binder layer, an Al foil, a formed layer, and a polyolefin heat sealing layer; with electrode lead sealing films placed between the packaging material and battery leads.

IC ICM H01M002-06  
ICS B32B027-32; B65D065-40; B65D075-26; B65D085-86; C08J005-18; C08L023-16; C08L051-06; H01M002-02; H01M002-08

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 38

ST battery laminate packaging material  
electrode lead sealing film; acid modified  
ethylene propylene polymer battery electrode sealing;  
polypropylene polymer blend battery electrode sealing

IT Packaging materials  
Sealing compositions  
Secondary batteries  
(laminated packaging materials contg. electrode lead sealing films for batteries)

IT 7429-90-5, Aluminum, uses 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-07-0D, Polypropylene, unsatd. acid grafted 9010-79-1, Ethylene-propylene copolymer 9019-29-8, Butylene-ethylene copolymer 9019-30-1, Butylene-propylene copolymer 61722-01-8, Butylene-ethylene-propylene copolymer  
RL: DEV (Device component use); USES (Uses)  
(laminated packaging materials contg. electrode lead sealing films for batteries)

L22 ANSWER 6 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2002:486770 HCAPLUS  
TITLE: Production method of control valve type lead storage battery. [Machine Translation].

INVENTOR(S): Osaki, Makoto; Eguchi, Norihiro; Takeuchi,  
Taisuke; Hosokawa, Masaaki  
PATENT ASSIGNEE(S): Yuasa Corporation, Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2002184454	A2	20020628	JP 2000-380386	200012 14
PRIORITY APPLN. INFO.:				200012 14

AB [Machine Translation of Descriptors]. Production method of the control valve type lead storage **battery** which can be produced the electric **battery** which prevents the accumulation of the lead sulfate with **cathode**, without causing short circuit is offered. This invention, through the separator 3 of flat condition, positive plate **laminating** with 1 and **cathode** board 2, receives the polar group which becomes inside **battery** jar 4, makes the **electrolyte** the said polar group keep and being production method of the control valve type lead storage **battery** which transforms inside the **battery** jar, the side edge 3b has **extended** the aforementioned separator 3, from the side edge of electrode 1,2, inside the **battery** jar the aforementioned separator inserting spacer 10 between 3 and the **battery** jar 4 question after the transforming, it features that it presses the aforementioned side edge 3b.

IC ICM H01M010-12

L22 ANSWER 7 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2001:865027 HCAPLUS  
DOCUMENT NUMBER: 136:9037  
TITLE: Laminar **battery**  
INVENTOR(S): Kojima, Hideaki  
PATENT ASSIGNEE(S): Sony Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2001332241	A2	20011130	JP 2000-150736	200005 23
PRIORITY APPLN. INFO.:				200005 23

AB The **battery** has a humidity resistant resin and metal **laminate** package, an **electrode** stack inserted in the package, elec. leads connected to the **electrode** collectors and **extended outside the package**, and an adhesive sealing the open end of the package; where the joints between the electrode collector and the leads are located at the sealing area of the leads, and the sealing area is shorter than the length of the collector-lead joining area.

IC ICM H01M002-30  
ICS H01M002-06; H01M002-08; H01M002-26; H01M006-16; H01M006-18; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **lamina battery electrode lead**  
joint sealing structure

IT Seals (parts)  
(seal structure of **electrode-elec. lead** connection in secondary lithium **batteries** with resin/metal laminate packages)

IT **Battery electrodes**  
(structure of **electrode-elec. lead** connection in secondary lithium **batteries** with resin/metal laminate packages)

IT Polyesters, uses  
RL: DEV (Device component use); USES (Uses)  
(structure of **electrode-elec. lead** connection in secondary lithium **batteries** with resin/metal laminate packages)

IT 7429-90-5, Aluminum, uses 9003-07-0, Polypropylene 25038-59-9, Poly(ethylene terephthalate), uses  
RL: DEV (Device component use); USES (Uses)  
(structure of **electrode-elec. lead** connection in secondary lithium **batteries** with resin/metal laminate packages)

IT 7440-02-0, Nickel, uses  
RL: DEV (Device component use); USES (Uses)  
(structure of **electrode-nickel lead** connection in secondary lithium **batteries** with resin/metal laminate packages)

L22 ANSWER 8 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2001:778271 HCAPLUS  
DOCUMENT NUMBER: 135:306293  
TITLE: Secondary nonaqueous **electrolyte batteries**  
INVENTOR(S): Ootake, Yuji; Sakashita, Fumiharu; Yoshio, Hideaki  
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2001297748	A2	20011026	JP 2000-114886	200004



JP 3596420  
PRIORITY APPLN. INFO.:

B2 20041202

JP 2000-114886

17

200004  
17

AB The **batteries** have a flat electrode-separator stack in a polymer based **laminated package**, with **electrode leads extended outside the package**; where the **electrode leads** are covered successively with a metal bonding resin, a high m.p. resin, and a low m.p. bonding resin at areas contacting the sealing area of the package.

IC ICM H01M002-30

ICS H01M002-08; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary nonaq **battery package electrode lead sealing**

IT Seals (parts)

(**laminated** sealing layers for **electrode leads** in secondary lithium **batteries** with laminated packages)

IT Secondary **batteries**

(lithium; **laminated** sealing layers for **electrode leads** in secondary lithium **batteries** with laminated packages)

IT 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses 9002-88-4, Polyethylene 9003-07-0D, Polypropylene, maleic acid modified 9010-79-1, Ethylene-propylene copolymer

RL: DEV (Device component use); USES (Uses)

(**laminated** sealing layers for **electrode leads** in secondary lithium **batteries** with laminated packages)

L22 ANSWER 9 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:749126 HCAPLUS

DOCUMENT NUMBER: 133:337697

TITLE: Laminar **batteries**

INVENTOR(S): Shimazu, Kenji

PATENT ASSIGNEE(S): Toshiba Battery Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2000299130	A2	20001024	JP 1999-106603	199904 14

PRIORITY APPLN. INFO.: JP 1999-106603

199904  
14

AB The **batteries** have a stack of unit cells sealed in a resin film package and connection terminals outside the package; where the **cathode lead of 1 unit cell extended outside the package forming a cathode terminal**, the ~~anode lead of 1 unit cell extended~~ outside the **package** forming an anode terminal, and the

electrodes of other cells are connected to the extended leads of the same polarity.

IC ICM H01M010-40  
ICS H01M006-46  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST laminar battery electrode terminal structure  
IT Battery electrodes  
(structure of electrodes terminal connections for multi-cell secondary lithium batteries)

L22 ANSWER 10 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2000:534509 HCAPLUS  
DOCUMENT NUMBER: 133:137853  
TITLE: Laminar batteries  
INVENTOR(S): Sasaki, Mitsuru; Yoshihara, Yasuo; Yoshio, Hideaki  
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2000215877	A2	20000804	JP 1999-11786	19990120
PRIORITY APPLN. INFO.:			JP 1999-11786	19990120

AB The batteries have a cathode film or sheet, an electrolyte retaining polymer separator, and an anode stacked together and sealed in a case of a resin based laminate; where the cathode and the anode have a terminal welded to a lead extended outside the case, and the welding end of the lead is folded into an s shape.

IC ICM H01M002-22  
ICS H01M002-06; H01M002-26; H01M002-30  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST sealed laminar battery electrode lead structure  
IT Battery electrodes  
(electrode leads with bent ends for welding to electrodes in sealed laminar batteries)

L22 ANSWER 11 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2000:314960 HCAPLUS  
DOCUMENT NUMBER: 132:296161  
TITLE: Nonaqueous electrolyte batteries and their manufacture  
INVENTOR(S): Hatsuta, Kazuhito; Hatazawa, Tsuyonobu; Hara, Tomitaro  
PATENT ASSIGNEE(S): Sony Corporation, Japan  
SOURCE: PCT Int. Appl., 39 pp.  
CODEN: PIXXD2

DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000026976	A1	20000511	WO 1999-JP6055	19991029
W: CN, JP, KR, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1043785	A1	20001011	EP 1999-951170	19991029
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
TW 429644	B	20010411	TW 1999-88118908	19991030
US 6797430	B1	20040928	US 2000-582752	20001226
US 2004197646	A1	20041007	US 2004-831088	20040423
PRIORITY APPLN. INFO.:				
			JP 1998-311482	A 19981030
			WO 1999-JP6055	W 19991029
			US 2000-582752	A1 20001226

AB The batteries have a laminated packaging material enclosing the battery elements by melt bonding, with the electrode leads extended the package through the melt bonded area, where the electrode leads are covered with a sealant resin, at areas corresponding to the melt bonding area of the package, and the sealant resin has, at least on 1 side, a shape similar to that of the collector. The batteries are prepd. by wrapping the battery elements with the packing material and melt bonding, by using heater heads having an elastomer, at least at the area corresponding to the sealant resin, for the bonding.

IC ICM H01M002-06  
 ICS H01M002-08; H01M002-30; H01M006-18; H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST nonaq battery laminate packaging material  
electrode lead sealing  
 IT Fluoropolymers, uses  
 Silicone rubber, uses  
 Urethane rubber, uses  
 RL: NUU (Other use, unclassified); USES (Uses)

(heater heads with elastomer surface in manuf. of  
**batteries** sealed with laminated packaging materials)

IT Ionomers  
Polyamides, uses  
Polyesters, uses  
Polyimides, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(sealant resins on electrode leads between melt bonding laminated  
packing materials for secondary lithium **batteries**)

IT 9002-84-0, Polytetrafluoroethylene  
RL: NUU (Other use, unclassified); USES (Uses)  
(heater heads with elastomer surface in manuf. of  
**batteries** sealed with laminated packaging materials)

IT 9003-07-0D, Polypropylene, maleic acid modified 9010-77-9, Acrylic  
acid-ethylene copolymer 25038-59-9, Poly(ethylene terephthalate),  
uses 25053-53-6, Ethylene-methacrylic acid copolymer  
RL: MOA (Modifier or additive use); USES (Uses)  
(sealant resins on electrode leads between melt bonding laminated  
packing materials for secondary lithium **batteries**)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses  
RL: DEV (Device component use); PEP (Physical, engineering or  
chemical process); PROC (Process); USES (Uses)  
(structure of sealant resins on electrode leads between melt  
bonding laminated packing materials for secondary lithium  
**batteries**)

IT 9003-07-0, Polypropylene  
RL: DEV (Device component use); PEP (Physical, engineering or  
chemical process); PROC (Process); USES (Uses)  
(structure of sealant resins on **electrode** leads between  
polypropylene **laminated** packing materials for secondary  
lithium **batteries**)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN  
THE RE FORMAT

L22 ANSWER 12 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1999:610805 HCAPLUS  
DOCUMENT NUMBER: 131:231002  
TITLE: Lightweight secondary nonaqueous-  
**electrolyte** lithium **battery**  
INVENTOR(S): Kusakabe, Tetsuya  
PATENT ASSIGNEE(S): Kao Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11260414	A2	19990924	JP 1998-57875	199803 10
PRIORITY APPLN. INFO.: JP 1998-57875				199803 10

AB The **battery** is obtained by the following steps: (1)

forming a current-collecting tab by coating a **protrusion** placed at one edge of a rectangular current collector with a thermally fusible polymer except for a terminal region, (2) inserting the current collector and a (coiled) **laminated** of **electrodes** into a casing having a thermally fusible polymer film on the inside, (3) welding the periphery of the casing via the tab by fusing the polymers for forming a sealed **lead electrode**. The **battery** has high leakage resistance.

IC ICM H01M010-40  
ICS H01M002-06; H01M004-66; H01M010-04  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST lightwt nonaq **electrolyte** lithium **battery**;  
leakage resistance nonaq **electrolyte** lithium **battery**  
IT Platinum-group metals  
RL: DEV (Device component use); USES (Uses)  
(current collector; lightwt. nonaq.-**electrolyte** lithium **battery** having highly sealed **lead electrode** for leakage prevention)  
IT Fluoropolymers, uses  
RL: DEV (Device component use); USES (Uses)  
(sealant; lightwt. nonaq.-**electrolyte** lithium **battery** having highly sealed **lead electrode** for leakage prevention)  
IT Secondary **batteries**  
(sealed; lightwt. nonaq.-**electrolyte** lithium **battery** having highly sealed **lead electrode** for leakage prevention)  
IT 7429-90-5, Aluminum, uses 7440-32-6, Titanium, uses 7440-50-8, Copper, uses 12597-68-1, Stainless steel, uses  
RL: DEV (Device component use); USES (Uses)  
(current collector; lightwt. nonaq.-**electrolyte** lithium **battery** having highly sealed **lead electrode** for leakage prevention)  
IT 9003-07-0 24937-79-9  
RL: DEV (Device component use); USES (Uses)  
(sealant; lightwt. nonaq.-**electrolyte** lithium **battery** having highly sealed **lead electrode** for leakage prevention)

L22 ANSWER 13 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1996:350292 HCAPLUS

DOCUMENT NUMBER: 125:15241

TITLE: Lithium ion secondary **battery** having improved configuration of positive **electrode lead**

INVENTOR(S): Koga, Yasunobu; Anzai, Chiaki; Takahashi, Hideya; Watanabe, Ayaki

PATENT ASSIGNEE(S): Sony Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 08096839 A2 19960412 JP 1994-228283

199409  
22

PRIORITY APPLN. INFO.: JP 1994-228283

199409  
22

AB In a Li ion secondary **battery** having a rectangular laminated **electrode** assembly, a pos. **electrode lead protrudes** beyond the neg. **electrode** at a distance greater than the neg. electrode thickness. Short circuit caused by contact between the neg. electrode and the pos. **electrode lead** is prevented.

IC ICM H01M010-38

ICS H01M002-26; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium ion secondary **battery** pos electrode

IT Electrodes

(**battery**, lithium ion secondary **battery** having improved configuration of pos. **electrode lead**)

L22 ANSWER 14 OF 14 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1993:128464 HCAPLUS

DOCUMENT NUMBER: 118:128464

TITLE: **Anodes for lead-acid batteries** and their manufacture

INVENTOR(S): Kawai, Katsuyoshi; Hironaka, Kensuke

PATENT ASSIGNEE(S): Shin-Kobe Electric Machinery Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04351850	A2	19921207	JP 1991-126300	19910530

199105  
30

PRIORITY APPLN. INFO.: JP 1991-126300

199105  
30

AB The anodes have a thin active-mass layer on 1 side of an **electrolyte** retainer and an embedded Pb foil or plate thinner than the layer that **protrudes** to form a lug. The anodes are prep'd. by applying an active-mass paste on the retainer, embedding the foil/plate in the paste layer, drying, and forming. The edge of the formed anodes may be reinforced by pressing at 320-400° or by casting molten Pb to form a frame. **Batteries** using these anodes are lightwt.

IC ICM H01M004-14

ICS H01M004-20

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lead **battery** lightwt **anode**IT **Anodes**

(battery, lead, laminated with  
 electrolyte retainers, manuf. of lightwt.)  
 IT 7439-92-1P, Lead, uses  
 RL: PREP (Preparation); USES (Uses)  
 (anodes, laminated with electrolyte  
 retainers, manuf. of, for lightwt. batteries)

=> d 123 ibib abs hitstr hitind 1-25

L23 ANSWER 1 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:563906 HCAPLUS  
 DOCUMENT NUMBER: 143:100268  
 TITLE: Membrane-electrode assembly and fuel cell which  
 uses the assembly  
 INVENTOR(S): Honbo, Hidetoshi; Morishima, Makoto; Motegi,  
 Akira; Suzuki, Shuichi; Takamori, Yoshiyuki;  
 Ogino, Masahiko; Kuwahara, Kosuke; Ando,  
 Hiroshi; Miyauchi, Akihiro  
 PATENT ASSIGNEE(S): Hitachi Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005174620	A2	20050630	JP 2003-409740	200312 09
PRIORITY APPLN. INFO.:			JP 2003-409740	200312 09

AB The assembly uses a polymer **electrolyte** membrane, having  
 micro-protrusions formed on 1 or both side of a polymer  
**electrolyte** membrane by plastic working. The fuel cell uses  
 the above assembly.  
 IC ICM H01M008-02  
 ICS H01M004-86; H01M008-10  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST fuel cell **electrolyte** membrane **electrode**  
**lamine** micro **protrusion**  
 IT Fuel cell electrodes  
 Fuel cell **electrolytes**  
 Fuel cells  
 (membrane-**electrode** assemblies using micro-  
**protrusion** contg. polymer **electrolyte** membranes  
 for fuel cells)  
 IT Carbon black, uses  
 RL: DEV (Device component use); USES (Uses)  
 (membrane-**electrode** assemblies using micro-  
**protrusion** contg. polymer **electrolyte** membranes  
 for fuel cells)  
 IT 7440-06-4, Platinum, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (membrane-**electrode** assemblies using micro-

**protrusion** contg. polymer **electrolyte** membranes  
for fuel cells)

IT 77950-55-1, Nafion 115

RL: DEV (Device component use); USES (Uses)  
(membrane-**electrode** assemblies using micro-  
**protrusion** contg. polymer **electrolyte** membranes  
for fuel cells)

L23 ANSWER 2 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:563900 HCAPLUS

DOCUMENT NUMBER: 143:62755

TITLE: The polymer **electrolyte** membrane-  
**electrode laminates** for fuel  
cells, fuel cells, and electronic equipments  
which uses the fuel cells

INVENTOR(S): Motegi, Akira; Takamori, Yoshiyuki; Suzuki,  
Shuichi; Miyauchi, Akihiro; Ogino, Masahiko;  
Kuwahara, Kosuke; Ando, Hiroshi; Honbo,  
Hidetoshi

PATENT ASSIGNEE(S): Hitachi Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005174564	A2	20050630	JP 2003-408384	200312 08
PRIORITY APPLN. INFO.: JP 2003-408384				200312 08

AB The disclosed polymer **electrolyte-electrode**  
**laminates** for fuel cells are characterized in that the both  
surfaces of the electrode are precision stamped to have uniformly  
distributed fine protrusions/indentations. The  
protrusions/indentations improve the bonding of the membrane with  
electrodes and increase the effective surface area of interfaces,  
and hence improves the power generation efficiency of the fuel cell.

IC ICM H01M004-86

ICS H01M008-00; H01M008-02; H01M008-10

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST fuel cell polymer **electrolyte** membrane  
**electrode laminate**

IT Polymer **electrolytes**  
(membrane; laminate with press-formed fuel cell electrodes)

IT Fuel cell **electrodes**  
(precision stamped **protrusions**/indentations for  
improved bonding with polymer **electrolyte** membranes)

L23 ANSWER 3 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:972105 HCAPLUS

DOCUMENT NUMBER: 142:180399

TITLE: Coin-shaped lithium ion secondary  
**battery**



INVENTOR(S): Kim, Yeong Deok; Lee, Yun Min; Yoon, Hyeon Guk  
 PATENT ASSIGNEE(S): Korea Powercell Inc., S. Korea  
 SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given  
 CODEN: KRXXA7  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Korean  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2002088469	A	20021129	KR 2001-26935	20010517
PRIORITY APPLN. INFO.: KR 2001-26935				20010517

AB A coin-shaped lithium ion secondary **battery** is provided, to reduce the contact resistance by increasing the contact area of an electrode and a terminal and to improve the sealing property by joining a can and a cap by the mech. joining method using a polymer resin. The coin-shaped lithium ion secondary **battery** comprises a plurality of pocketing electrode bodies; a plurality of secondary **electrode** plates which are **laminated** alternatively with the each pocketing electrode body; a metal can which receives the laminated body consisting of the pocketing electrode bodies and the secondary electrode plates; a metal cap; and an **electrolyte** soln. injected into the laminated body. The can and the cap are elec. insulated each other by a gasket. The can is connected with a metal foil surrounding the **projected** part of neg. **electrode** plates, and the cap is connected with the metal foil surrounding the **projected** part of pos. **electrode** plates, wherein the can and the cap act as a terminal.

IC ICM H01M010-36  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST coin shaped lithium ion secondary **battery** electrode contact area  
 IT **Battery** electrodes  
 (coin-shaped lithium ion secondary **battery**)  
 IT Secondary **batteries**  
 (lithium; coin shaped lithium ion secondary **battery**)  
 IT 17341-24-1, uses  
 RL: DEV (Device component use); USES (Uses)  
 (coin shaped lithium ion secondary **battery**)

L23 ANSWER 4 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:72138 HCAPLUS  
 TITLE: Both tub type cell and group electric **battery** [Machine Translation].  
 INVENTOR(S): Ogata, Shinya  
 PATENT ASSIGNEE(S): Nissan Motor Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004031270	A2	20040129	JP 2002-189464	200206 28
PRIORITY APPLN. INFO.:			JP 2002-189464	200206 28

AB [Machine Translation of Descriptors]. The plus and minus polar tub mutually extending offers both tub type cell which it tries to be able to concentrate the detection line which detects the voltage of the cell which is present on the one hand on side to opposite direction. The positive electrode foil through separator 101c, it laminates with 104 where active material 104a and 105a were applied to both sides respectively and **cathode** foil 105 in **plural layers**, when this laminated body 101 is made to soak to **electrolyte** 102 it seals up with cladding 100. Positive electrode foil 104 of each stratum and cathode foil 105 it connects to the respective positive electrode tub 1b and cathode tub 1c, makes positive electrode tub 1b and **cathode** tub **extend** 1c from cladding 100. Lining up into plus and minus polar tub 1b and 1c, it provides detection terminal 11b and 11c which detect the output voltage between the positive electrode tub and the cathode tub respectively.

IC ICM H01M002-30  
ICS H01M002-10; H01M006-46; H01M010-40

L23 ANSWER 5 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2004:72131 HCAPLUS  
TITLE: Laminating electric **battery** and group  
electric **battery** [Machine  
Translation].  
INVENTOR(S): Ogata, Shinya  
PATENT ASSIGNEE(S): Nissan Motor Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004031195	A2	20040129	JP 2002-187453	200206 27
JP 3775356	B2	20060517		
PRIORITY APPLN. INFO.:			JP 2002-187453	200206 27

AB [Machine Translation of Descriptors]. You connect the tub of the laminating electric **battery** which is laminated, without bending the tub. Correct electrode 101a and negative electrode 101b through separator 101c, **laminating**, it forms internal **electrode** opposite 101, when electrode opposite 101 inside

this is made to soak to the **electrolyte** it seals up with outside package body, 10 in the respective positive electrode tub connects correct electrode 101a of each stratum and negative electrode 101b 21 and cathode tub 22, this positive electrode tub 21 and **cathode** tub **extend** 22 makes from outside package body 10 and forms the laminating electric **battery**. At that time, positive electrode tub 21 is provided on upper side of internal electrode opposite 101, cathode tub 22 is provided on lower part side.

IC ICM H01M002-02  
ICS H01M002-20; H01M002-26; H01M002-30

L23 ANSWER 6 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:72116 HCAPLUS  
TITLE: Laminating electric **battery** and group electric **battery** [Machine Translation].  
INVENTOR(S): Ogata, Shinya  
PATENT ASSIGNEE(S): Nissan Motor Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2004031121	A2	20040129	JP 2002-185808	20020626
PRIORITY APPLN. INFO.:				20020626
				20020626

AB [Machine Translation of Descriptors]. The laminating electric **battery** which possesses alignment datum level is offered. The positive electrode foil through separator 101c, it laminates with 104 where active material 104a and 105a were applied to both sides respectively and **cathode** foil 105 in **plural** layers, when this laminated body 101 is made to soak to **electrolyte** 102 it seals up with cladding 100. Positive electrode foil 104 of each stratum and cathode foil 105 it connects to the respective positive electrode terminal 1b and cathode terminal 1c, makes positive electrode terminal 1b and **cathode** terminal **extend** 1c from cladding 100. Positive electrode terminal 1b and cathode terminal 1c with the direction which sudden facilities is done and the direction which crosses, positive electrode foil 104 and cathode foil width of 105 and separator 101c are abbreviation identical. In addition, positive electrode foil active material 104a and 105a are applied to the specified width territory of central site of 104 and cathode foil 105. Positive electrode foil the insulating material 104b which functioning does not do, to the specified territory of cross direction both ends side of 104 or cathode foil 105 as an electric **battery** is applied to the active material and abbreviation identical thickness. Side 100S of cladding 100, reaches vertical alignment datum level vis-a-vis plus and minus polar terminal 1b and 1c.

IC ICM H01M010-40  
ICS H01M002-02; H01M002-10

L23 ANSWER 7 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:573533 HCAPLUS

DOCUMENT NUMBER: 137:111750

TITLE: Polymer **electrolyte** fuel cell  
and its manufacture

INVENTOR(S): Fukuda, Kaoru; Ando, Keisuke; Matsuo, Junji;  
Sugiyama, Yuichiro; Saito, Nobuhiro

PATENT ASSIGNEE(S): Honda Motor Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 2002216801	A2	20020802	JP 2001-12491	200101 19
JP 3556171	B2	20040818		
DE 10201692	A1	20020905	DE 2002-10201692	200201 17
US 2002155340	A1	20021024	US 2002-50518	200201 18
CA 2368740	AA	20020719	CA 2002-2368740	200201 21
PRIORITY APPLN. INFO.:			JP 2001-12491	A 200101 19
			JP 2001-12493	A 200101 19

AB The fuel cell has a polymer **electrolyte** membrane held between the catalyst layers of a pair of electrodes, with part of the catalyst layers extended into the **electrolyte** membrane. The fuel cell is prepd. by applying a soln. of the polymer **electrolyte** on a n electrode catalyst layer, applying a catalyst slurry for the other electrode on the **electrolyte** soln. layer, when the solvent content in the **electrolyte** soln. layer falls to 5-20%, and hot pressing the **electrolyte-catalyst laminate** between **electrodes**.

IC ICM H01M008-02

ICS H01M008-02; H01M004-88; H01M004-94; H01M004-96

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST polymer **electrolyte** fuel cell structure manuf

IT Polyketones

RL: CAT (Catalyst use); USES (Uses)

(polyether-, sulfonated; structure and manuf. of polymer **electrolyte** fuel cells with **electrode**

catalyst layer **extended** in **electrolyte** membranes)

IT Polyethers, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (polyketone-, sulfonated; structure and manuf. of polymer **electrolyte** fuel cells with **electrode** catalyst layer **extended** in **electrolyte** membranes)

IT Fuel cells  
 (structure and manuf. of polymer **electrolyte** fuel cells with **electrode** catalyst layer **extended** in **electrolyte** membranes)

IT Carbon black, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (structure and manuf. of polymer **electrolyte** fuel cells with **electrode** catalyst layer **extended** in **electrolyte** membranes)

IT 7440-06-4, Platinum, uses  
 RL: CAT (Catalyst use); USES (Uses)  
 (structure and manuf. of polymer **electrolyte** fuel cells with **electrode** catalyst layer **extended** in **electrolyte** membranes)

IT 31694-16-3  
 RL: CAT (Catalyst use); USES (Uses)  
 (sulfonated; structure and manuf. of polymer **electrolyte** fuel cells with **electrode** catalyst layer **extended** in **electrolyte** membranes)

L23 ANSWER 8 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2002:388584 HCAPLUS  
 DOCUMENT NUMBER: 136:372286  
 TITLE: Manufacture of polymer **electrolyte** membrane-**electrode** laminate for fuel cell  
 INVENTOR(S): Yano, Junichi; Hasegawa, Masaaki  
 PATENT ASSIGNEE(S): Honda Motor Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2002151099	A2	20020524	JP 2000-341721	20001109
PRIORITY APPLN. INFO.:			JP 2000-341721	20001109

AB The laminate is prepd. by: holding a polymer **electrolyte** membrane between a cathode and an anode, holding the edge of the **electrolyte** membrane **protruded** from the **electrodes** with a pair of frame sheets, holding the **electrolyte-electrode** assembly between a pair of heat resistant sheets, with  $\geq 1$  of the sheets having open holes facing the electrode edges, holding the heat resistant sheet covered

assembly with a pair of water absorbing sheet, and hot pressing.

IC ICM H01M008-02  
ICS H01M008-10

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST fuel cell polymer electrolyte electrode laminate manuf

IT Polyoxyalkylenes, uses  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(fluorine- and sulfo-contg., ionomers; manuf. of polymer electrolyte membrane-carbon sheet electrode laminates for fuel cells)

IT Fluoropolymers, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(in manuf. of polymer electrolyte membrane-carbon sheet electrode laminates for fuel cells)

IT Carbonaceous materials (technological products)  
RL: DEV (Device component use); USES (Uses)  
(manuf. of polymer electrolyte membrane-carbon sheet electrode laminates for fuel cells)

IT Fuel cells  
(manuf. of polymer electrolyte membrane-electrode laminates for fuel cells)

IT Fluoropolymers, uses  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(polyoxyalkylene-, sulfo-contg., ionomers; manuf. of polymer electrolyte membrane-carbon sheet electrode laminates for fuel cells)

IT Ionomers  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(polyoxyalkylenes, fluorine- and sulfo-contg.; manuf. of polymer electrolyte membrane-carbon sheet electrode laminates for fuel cells)

IT Glass fibers, uses  
RL: NUU (Other use, unclassified); USES (Uses)  
(water absorbing sheets in manuf. of polymer electrolyte membrane-carbon sheet electrode laminates for fuel cells)

IT 9002-84-0, Ptfе  
RL: NUU (Other use, unclassified); USES (Uses)  
(in manuf. of polymer electrolyte membrane-carbon sheet electrode laminates for fuel cells)

L23 ANSWER 9 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:349357 HCAPLUS  
DOCUMENT NUMBER: 136:343333  
TITLE: Nonaqueous electrolyte battery  
INVENTOR(S): Suzuki, Nobukazu; Koyashiki, Yasushi; Taguchi, Toru  
PATENT ASSIGNEE(S): Toshiba Corp., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002134074	A2	20020510	JP 2000-329405	20001027
PRIORITY APPLN. INFO.:			JP 2000-329405	20001027

AB The **battery** has a cathode, an anode, and an **electrolyte** sealed in a metal-thermoplastic resin **laminate** sheet bag, with **electrode** terminals **protruding** from the bag and sealed by resin film; where the sheet has a metal film and  $\geq 1$  thermoplastic resin film, and the resin film contains a water trapping agent.

IC ICM H01M002-02  
ICS H01M004-58; H01M006-16; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nonaq **battery** metal thermoplastic laminate bag water trapping agent

IT Secondary **batteries**  
(lithium; water trapping agent contg. thermoplastic films in laminate sheets for secondary lithium **battery** packaging)

IT Packaging materials  
(water trapping agent contg. thermoplastic films in laminate sheets for secondary lithium **battery** packaging)

IT 1309-48-4, Magnesium oxide, uses 1314-13-2, Zinc oxide, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 9003-07-0, Polypropylene 13463-67-7, Titania, uses 18282-10-5, Tin dioxide  
RL: DEV (Device component use); USES (Uses)  
(water trapping agent contg. thermoplastic films in laminate sheets for secondary lithium **battery** packaging)

L23 ANSWER 10 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:919213 HCAPLUS

DOCUMENT NUMBER: 136:40221

TITLE: **Electrolyte-electrode laminate** and phosphoric acid fuel cell

INVENTOR(S): Akita, Hiroshi

PATENT ASSIGNEE(S): Honda Motor Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001351648	A2	20011221	JP 2000-167846	20000605
PRIORITY APPLN. INFO.:			JP 2000-167846	20000605

AB The laminate has a H3PO4 impregnated basic polymer **electrolyte** layer, and a cathode and an anode on the opposite sides of the **electrolyte** layer, where the **electrolyte** membrane has an electrochem. active area between the **electrodes**, and inactive areas **protruded** from the **electrodes**. The fuel cell has reaction gas supplying separators holding the laminate.

IC ICM H01M008-02  
ICS H01M008-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST fuel cell **electrolyte electrode laminate** structure

IT Fuel cells  
(phosphoric acid impregnated basic polymer **electrolyte** layer contg. **electrode** contacting area and **protruded** edges for fuel cells)

IT Polybenzimidazoles  
RL: DEV (Device component use); USES (Uses)  
(phosphoric acid impregnated basic polymer **electrolyte** layer contg. **electrode** contacting area and **protruded** edges for fuel cells)

IT 7664-38-2, Phosphoric acid, uses  
RL: DEV (Device component use); USES (Uses)  
(phosphoric acid impregnated basic polymer **electrolyte** layer contg. **electrode** contacting area and **protruded** edges for fuel cells)

L23 ANSWER 11 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2001:778268 HCAPLUS  
DOCUMENT NUMBER: 135:306291  
TITLE: Secondary nonaqueous **electrolyte batteries**  
INVENTOR(S): Kitayama, Hiroaki; Imanishi, Hiroaki; Yoshio, Hideaki  
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2001297737	A2	20011026	JP 2000-114885	20000417
PRIORITY APPLN. INFO.:			JP 2000-114885	20000417

AB The **batteries** have an electrode stack contg. a cathode, an **electrolyte** retaining separator, and an anode in a resin film based **laminated battery** case, and **electrode** leads **extended** outside the case; where the **battery** case has a recessed electrode stack receiving area, which is a laminate having successively layers, from the electrode stack side, of a buffer resin, a resin block, a buffer



resin, a metal foil, and a surface resin.

IC ICM H01M002-02  
ICS H01M002-30; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary nonaq **battery** laminated case structure

IT Secondary **batteries**  
(lithium; secondary lithium **batteries** with laminated  
polymer-aluminum cases contg. ethylene-propylene copolymer buffer  
and block layers)

IT Polyamides, uses  
RL: DEV (Device component use); USES (Uses)  
(secondary lithium **batteries** with laminated  
polymer-aluminum cases contg. ethylene-propylene copolymer buffer  
and block layers)

IT 7429-90-5, Aluminum, uses 9010-79-1  
RL: DEV (Device component use); USES (Uses)  
(secondary lithium **batteries** with laminated  
polymer-aluminum cases contg. ethylene-propylene copolymer buffer  
and block layers)

L23 ANSWER 12 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:246781 HCAPLUS

DOCUMENT NUMBER: 134:268772

TITLE: Flat **battery** having resin laminate  
packaging case

INVENTOR(S): Matsumasa, Yoshitaka; Ogawa, Masahiko; Yoshio,  
Hideaki; Imanishi, Hiroaki

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2001093489	A2	20010406	JP 2000-11452	200001 20
PRIORITY APPLN. INFO.:			JP 1999-11787	A 199901 20
			JP 1999-203091	A 199907 16

AB A flat **battery** comprises film **electrodes**  
laminated via an **electrolyte**-retaining polymer  
separator, a packaging case made of a resin laminate sheet which  
involves a seal part, and a **cathode**- and **anode**  
leads **extended** from the seal part; wherein the seal part  
is equipped with a safety valve members made of a hot weldable resin  
sheet having a m.p. lower than the resin laminate sheet. The  
packaging case may be assembled by folding and hot welding. The  
seal part deforms upon abnormal temp. elevation of the  
**batteries** and releases a gas generated in the  
**batteries**.

IC ICM H01M002-06  
ICS H01M002-02; H01M002-08; H01M002-12; H01M010-40  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 38  
ST flat **battery** packaging polymer laminate safety; valve  
safety flat **battery** release gas; ethylene polymer safety  
valve flat **battery**; polyethylene safety valve flat  
**battery**; polyacrylate safety valve flat **battery**  
IT Solid state secondary **batteries**  
(flat; flat **battery** having resin laminate packaging  
case)  
IT Polyamides, uses  
Polyesters, uses  
RL: DEV (Device component use); USES (Uses)  
(packaging case; flat **battery** having resin laminate  
packaging case)  
IT Packaging materials  
(resin laminate; flat **battery** having resin laminate  
packaging case)  
IT Safety valves  
(seal part in packaging case; flat **battery** having resin  
laminate packaging case)  
IT Laminated plastics, uses  
RL: DEV (Device component use); USES (Uses)  
(seal part in packaging case; flat **battery** having resin  
laminate packaging case)  
IT 9003-07-0, Polypropylene 25038-59-9, Polyethylene terephthalate,  
uses  
RL: DEV (Device component use); USES (Uses)  
(packaging case; flat **battery** having resin laminate  
packaging case)  
IT 9002-88-4, Polyethylene 9010-77-9, Acrylic acid-ethylene copolymer  
25053-53-6, Ethylene-methacrylic acid copolymer  
RL: DEV (Device component use); USES (Uses)  
(seal part in packaging case; flat **battery** having resin  
laminate packaging case)

L23 ANSWER 13 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2000:705454 HCAPLUS  
DOCUMENT NUMBER: 133:298752  
TITLE: Laminar **batteries**  
INVENTOR(S): Kodama, Yasunobu; Fujii, Takanori; Nakane,  
Yasuaki; Fukuoka, Satoru  
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2000277064	A2	20001006	JP 1999-85404	199903 29
PRIORITY APPLN. INFO.:			JP 1999-85404	199903 29

AB The **batteries** have an electrode-separator stack and an **electrolyte** in a container, having at least a resin layer on the inner side of a metal layer, with the **electrode** terminals **extending** beyond the resin sealed edge; where the cathode terminal and/or the anode terminal have a 1st part **extending** from the **electrode** to the sealed area, a 2nd part extending outward from the sealed area and joined to the 1st part at the sealed area, and an insulating sepn. sheet surrounding the joining area.

IC ICM H01M002-06  
ICS H01M002-08; H01M006-16; H01M006-18; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **laminar battery electrode** terminal structure

IT **Battery electrodes**  
(structure of **electrode** terminals in **laminar batteries**)

L23 ANSWER 14 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:705453 HCAPLUS

DOCUMENT NUMBER: 133:298751

TITLE: **Laminar batteries**

INVENTOR(S): Kodama, Yasunobu; Fujii, Takanori; Nakane, Yasuaki; Fukuoka, Satoru; Tamura, Katsuhiro; Koshoji, Yoshiyuki

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.  
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2000277062	A2	20001006	JP 1999-85405	199903 29
PRIORITY APPLN. INFO.: JP 1999-85405				199903 29

AB The **batteries** have an electrode stack contg. a separator and an **electrolyte** in a container, having at least a resin layer on the inner side of a metal layer, with the **electrode** terminals **extending** beyond the resin sealed edge; where the container is formed by folding a metal-resin laminate, with the edges of the folded resin layer facing each other close to where the edges of the separator in the stack will be, placing the **electrode** stack in folded **laminate**, and sealing the edge.

IC ICM H01M002-02  
ICS H01M002-06; H01M006-16; H01M006-18; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **laminar battery metal resin laminate container** manuf

IT **Secondary batteries**  
(lithium; manuf. of secondary lithium **batteries** with aluminum-polypropylene laminate containers)

IT 7429-90-5, Aluminum, uses 9003-07-0, Polypropylene  
 RL: DEV (Device component use); USES (Uses)  
 (manuf. of secondary lithium **batteries** with  
 aluminum-polypropylene laminate containers)

L23 ANSWER 15 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:377119 HCAPLUS

DOCUMENT NUMBER: 132:350286

TITLE: Laminar nonaqueous **electrolyte**  
**batteries**

INVENTOR(S): Kita, Yoshinori; Teranishi, Tadashi; Yoshida,  
 Tomokazu; Oshita, Ryuji; Noma, Toshiyuki;  
 Nishio, Akiharu

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 2000156209	A2	20000606	JP 1998-330093	199811 20
JP 3802250	B2	20060726	JP 1998-330093	199811 20

PRIORITY APPLN. INFO.: JP 1998-330093

AB The **batteries** have a cathode, an anode, and an  
**electrolyte** held between a pair of packaging materials,  
 having a resin layer on the inside and sealed to each other by the  
 resin layers at the edge, with **electrode** terminals  
**protruded** from the **packaging** materials; where at  
 least the areas of the terminals contacting the sealed area have a  
 conductive polymer surface.

ICM H01M002-06

ICS H01M002-08; H01M002-30; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **laminar battery electrode** terminal

conductive polymer

IT **Battery electrodes**

Conducting polymers

(**protruded electrode** terminals with

conductive polymer surface layer in laminar secondary lithium  
**batteries**)

IT 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses 25190-62-9,  
 Poly(p-phenylene) 25233-34-5, Polythiophene 30604-81-0,  
 Polypyrrole

RL: DEV (Device component use); USES (Uses)

(**protruded electrode** terminals with

conductive polymer surface layer in laminar secondary lithium  
**batteries**)

L23 ANSWER 16 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:34384 HCAPLUS

DOCUMENT NUMBER: 132:66700

TITLE: Nonaqueous **electrolyte batteries**  
INVENTOR(S): Komatsu, Shigeo; Tsukamoto, Hisashi; Nakahara, Hiroshi  
PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2000012094	A2	20000114	JP 1998-189875	19980619
PRIORITY APPLN. INFO.:				19980619

AB The **batteries** have an electrode stack in a metal-polymer laminate battery case, electrode terminals **extended** outside the case on 1 side of the case in its thickness direction, and a circuit preventing overcharge and over-discharge connected to the exposed terminals.

IC ICM H01M010-40  
ICS H01M002-06; H01M002-26; H01M002-34

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** overcharge preventing structure

IT Secondary **batteries**  
(structure of secondary nonaq. **batteries** contg.  
integrated overcharge and over-discharge preventing means)

L23 ANSWER 17 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:32663 HCAPLUS  
DOCUMENT NUMBER: 132:66680  
TITLE: Secondary nonaqueous **electrolyte batteries**  
INVENTOR(S): Kita, Fusaji; Ishikawa, Yuki; Matsumoto, Kazunobu  
PATENT ASSIGNEE(S): Hitachi Maxell, Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2000012093	A2	20000114	JP 1998-179968	19980626
PRIORITY APPLN. INFO.:				19980626

AB The **batteries** have an electrode-separator stack, where the microporous separator is **protruded** from the **electrodes** at both ends of the stack, with all or some of the pores in the electrode touching area near the protruded part being closed, and the cathode and anode have a height difference  $\leq 1$  mm between them.

IC ICM H01M010-40  
ICS H01M002-16; H01M004-02; H01M010-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary **battery** separator structure; electrode separator stack structure secondary **battery**

IT Secondary **batteries**  
(lithium; structure electrode stacks for secondary lithium **batteries**)

IT Secondary **battery** separators  
(structure of porous **laminated** separators in **electrode** stacks for secondary lithium **batteries**)

IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene  
RL: DEV (Device component use); USES (Uses)  
(structure of porous **laminated** separators in **electrode** stacks for secondary lithium **batteries**)

L23 ANSWER 18 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1999:261933 HCAPLUS  
DOCUMENT NUMBER: 130:299355  
TITLE: Manufacture of secondary polymer

**electrolyte** lithium ion **batteries**

INVENTOR(S): Kim, Dong-Won; Kim, Yang-Rok; Sun, Yan-Kuk; Oh, Boo-Kwon

PATENT ASSIGNEE(S): Samsung Display Devices Co., Ltd., S. Korea

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 11111338	A2	19990423	JP 1998-218944	199808 03
JP 3080227	B2	20000821		
KR 220449	B1	19990915	KR 1997-39079	199708 16
US 6268087	B1	20010731	US 1998-126487	199807 30
CA 2245048	AA	19990216	CA 1998-2245048	199808 14
CA 2245048	C	20020813		
PRIORITY APPLN. INFO.:			KR 1997-39079	A 199708 16

AB The **batteries** are prepd. by casting a slurry contg. an active mass, an elec. conductor, a binder, a plasticizer, and a common solvent to form films; laminating the films on both side of an **extended** metal (Cu for **anode** and Al for **cathode**) screen; soaking the **lamine** in a solvent to remove the plasticizer; and activating the the electrode by immersing in an **electrolyte** soln.

IC ICM H01M010-40  
ICS H01M004-02; H01M004-04; H01M004-58; H01M010-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium polymer **electrolyte battery** electrode  
manuf

IT **Battery** electrodes  
(manuf. of electrodes for secondary polymer **electrolyte** lithium **batteries**)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate 7782-42-5, Graphite, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12057-17-9, Lithium manganese oxide (LiMn2O4) 14283-07-9, Lithium fluoroborate 21324-40-3, Lithium hexafluorophosphate 25213-88-1, Acrylonitrile-methyl methacrylate-styrene copolymer 29935-35-1, Lithium hexafluoroarsenate  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(manuf. of electrodes for secondary polymer **electrolyte** lithium **batteries**)

IT 84-74-2, Dbp  
RL: NUU (Other use, unclassified); USES (Uses)  
(manuf. of electrodes for secondary polymer **electrolyte** lithium **batteries**)

L23 ANSWER 19 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1999:113262 HCAPLUS  
DOCUMENT NUMBER: 130:141663  
TITLE: Secondary lithium **batteries**  
INVENTOR(S): Kaji, Hayato  
PATENT ASSIGNEE(S): Toshiba Battery Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 11040198	A2	19990212	JP 1997-191340	199707 16
JP 3283213	B2	20020520		
PRIORITY APPLN. INFO.:			JP 1997-191340	199707 16

AB The **batteries** have a stack, contg. a Li<sup>+</sup> conducting **electrolyte** layer between a Li intercalating cathode-anode pair and leads connected to the electrodes, sealed between by a **lamine** with the **electrode** leads **extended**

outside; where the laminate has an insulator layer on the outside, a melt bonding resin layer on the inside facing the stack, and a metal foil between the 2 layers except the areas where the electrode leads are.

IC ICM H01M010-40  
ICS H01M002-02  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST secondary lithium **battery** laminate package; lithium  
**battery** resin metal laminate package  
IT Secondary **batteries**  
(lithium; structure of insulator-metal-melt bonding resin  
laminates for secondary lithium **batteries**)  
IT Seals (parts)  
(structure of insulator-metal-melt bonding resin laminates for  
secondary lithium **batteries**)  
IT Polyesters, uses  
RL: DEV (Device component use); USES (Uses)  
(structure of insulator-metal-melt bonding resin laminates for  
secondary lithium **batteries**)  
IT 7429-90-5, Aluminum, uses 9078-96-0, Surlyn 25038-59-9,  
Poly(ethylene terephthalate), uses  
RL: DEV (Device component use); USES (Uses)  
(structure of insulator-metal-melt bonding resin laminates for  
secondary lithium **batteries**)

L23 ANSWER 20 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:696834 HCAPLUS  
DOCUMENT NUMBER: 129:333320  
TITLE: Thin sealed **batteries**  
INVENTOR(S): Nishimoto, Yoshihiro; Ota, Hiromichi; Maeda,  
Shiori; Nakagawa, Hiroshi; Kodama, Yasunobu;  
Yamazaki, Mikiya; Sonozaki, Tsutomu; Fujii,  
Takanori; Nakane, Ikuro; Terashi, Kazuo; Oikawa,  
Kuni  
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan  
SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 10289698	A2	19981027	JP 1997-98913	199704 16
JP 3588225	B2	20041110		
PRIORITY APPLN. INFO.:			JP 1997-98913	199704 16

AB The **batteries** have electrodes and **electrolytes**  
sealed in a case composed of metal layers laminated with melt  
bonding resin layers on both sides, where the electrodes have metal  
collector tabs protruded from the **battery** case and sealed  
by melt bonding with the resin layers.

IC ICM H01M002-06  
ICS H01M010-00; H01M010-40



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST **battery** electrode tab resin melt bonding  
 IT **Secondary batteries**  
 (lithium; sealed **batteries** with resin-metal  
**laminate** cases and **protruded electrode**  
 collector tabs melt bonded by resin layers)  
 IT **Battery electrodes**  
 (sealed **batteries** with resin-metal **laminate**  
 cases and **protruded electrode** collector tabs  
 melt bonded by resin layers)  
 IT 7429-90-5, Aluminum, uses 9002-88-4D, Polyethylene, carboxylic  
 acid modified 9003-07-0D, Polypropylene, carboxylic acid modified  
 RL: DEV (Device component use); PEP (Physical, engineering or  
 chemical process); PROC (Process); USES (Uses)  
 (sealed **batteries** with resin-metal **laminate**  
 cases and **protruded electrode** collector tabs  
 melt bonded by resin layers)

L23 ANSWER 21 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:252916 HCAPLUS  
 DOCUMENT NUMBER: 128:259529  
 TITLE: secondary nonaqueous **electrolyte**  
**batteries**  
 INVENTOR(S): Yoshida, Hiroaki  
 PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 10106536	A2	19980424	JP 1996-277051	199609 26
JP 3702308	B2	20051005	JP 1996-277051	199609 26
PRIORITY APPLN. INFO.:				

AB The **batteries** have a coiled or **laminated**  
**electrode-separator** stack, where the **cathode** has  
 an edge **protruded** on 1 side of the stack and the  
**anode** has an edge **protruded** on the other side, and  
 either or both of the protruded edges have a 1-5 mm wide stripe not  
 covered with the electrode active mass for connecting to collectors  
 by laser welding.  
 IC ICM H01M002-26  
 ICS H01M002-22; H01M004-02; H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST **battery** electrode stack collector connection structure;  
 laser welding **battery** electrode collector  
 IT **Battery electrodes**  
 Lasers  
 (structure of laser welded electrode-collector connections in  
 secondary lithium **batteries**)

L23 ANSWER 22 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:68653 HCAPLUS  
 DOCUMENT NUMBER: 128:169836  
 TITLE: Tubular solid **electrolyte** fuel  
 cell of optimized width of  
 interconnector  
 INVENTOR(S): Nishiyama, Haruo; Kuroishi, Masahiro; Aizawa,  
 Masanobu  
 PATENT ASSIGNEE(S): Toto Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 10027619	A2	19980127	JP 1996-199562	199607 11
PRIORITY APPLN. INFO.: JP 1996-199562				199607 11

AB The fuel cell having air an **electrode** made of  
 cylindrically **laminated** membranes, solid  
**electrolyte** membranes, a fuel electrode, and a band  
 interconnector on the air electrode and the fuel **electrode**  
 , which is **extended** in the axis direction satisfies  $0.10$   
 $\leq w/\pi D \leq 0.30$  ( $D$  = outer diam. of the air electrode  
 or fuel electrode;  $w$  = width of the interconnector). The fuel cell  
 generates enough power in small size.

IC ICM H01M008-02  
 ICS H01M008-12

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST tubular solid **electrolyte** fuel cell; optimized  
 width interconnector fuel cell

IT Fuel cells

(tubular solid **electrolyte** fuel cell of  
 optimized interconnector width for generating high power)

IT 110584-66-2, Calcium chromium lanthanum oxide ( $\text{Ca}_{0.2}\text{CrLa}_{0.8}\text{O}_3$ )

RL: TEM (Technical or engineered material use); USES (Uses)  
 (interconnector, band; tubular solid **electrolyte** fuel  
 cell of optimized interconnector width for generating  
 high power)

L23 ANSWER 23 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1994:275401 HCAPLUS  
 DOCUMENT NUMBER: 120:275401  
 TITLE: Lithium **batteries** with multilayer  
 polymeric **electrolyte** and electrical  
 contacts for thin-layer **battery** anodes  
 INVENTOR(S): Gauthier, Michel; Belanger, Andre; Jacobs, James  
 K.  
 PATENT ASSIGNEE(S): Ricard, Serge, Can.; St-Amant, Guy  
 SOURCE: Can. Pat. Appl., 52 pp.  
 CODEN: CPXXEB  
 DOCUMENT TYPE: Patent

LANGUAGE: French  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
CA 2068290	AA	19931109	CA 1992-2068290	199205 08
CA 2068290	C	19990713		
JP 06068865	A2	19940311	JP 1993-106778	199305 07
PRIORITY APPLN. INFO.:			CA 1992-2068290	A 199205 08

AB The anode film in the title **batteries** and **extending** laterally beyond the **cathode** and its collector comprises a rigid metallic coating compatible with Li, e.g., Cu, Ni, Fe, or their alloys, which is not in elec. contact with the other components of the **battery** and constitutes its external terminal. The **batteries**, consist of a plastic insulator, a Li anode, a polymeric **electrolyte**, a cathode, and a metallic collector, or a cathode, a polymeric **electrolyte**, a Li anode, a polymeric **electrolyte**, and a cathode.

IC ICM H01M004-66  
 ICS H01M006-18; H01M006-16; H01M004-70

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **electrolyte** multilayer lithium **battery**

IT Electric contacts  
 (for **anodes** and **cathodes** in **multilayer** polymeric-**electrolyte** lithium **batteries**)

IT Cathodes  
 (**battery**, elec. contacts for multilayer polymeric-**electrolyte**)

IT Anodes  
 (**battery**, lithium, elec. contacts for multilayer polymeric-**electrolyte**)

IT aluminum alloy, base  
 silver alloy, base  
 zinc alloy, base  
 RL: DEV (Device component use); USES (Uses)  
 (elec. contacts, for **cathodes** in **multilayer** polymeric-**electrolyte** **batteries**)

IT copper alloy, base  
 iron alloy, base  
 nickel alloy, base  
 RL: DEV (Device component use); USES (Uses)  
 (elec. contacts, for lithium **anodes** in **multilayer** polymeric-**electrolyte** **batteries**)

IT 7429-90-5, Aluminum, uses 7440-22-4, Silver, uses 7440-66-6, Zinc, uses  
 RL: USES (Uses)  
 (elec. contacts, for **cathodes** in **multilayer** polymeric-**electrolyte** **batteries**)

IT 7439-89-6, Iron, uses 7440-02-0, Nickel, uses 7440-50-8, Copper, uses  
 RL: USES (Uses)  
 (elec. contacts, for lithium anodes in  
 multilayer polymeric-electrolyte  
 batteries)

L23 ANSWER 24 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1992:259068 HCAPLUS  
 DOCUMENT NUMBER: 116:259068  
 TITLE: Apparatus and method for manufacture of  
 monolithic solid-electrolyte fuel  
 cells  
 INVENTOR(S): Minh, Nguyen Q.; Horne, Craig R.  
 PATENT ASSIGNEE(S): Allied-Signal, Inc., USA  
 SOURCE: PCT Int. Appl., 34 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9204740	A1	19920319	WO 1991-US4854	199107 10
W: AU, BB, BG, BR, CA, FI, HU, JP, KP, KR, LK, MC, MG, MW, NO, PL, RO, SD, SU				
RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FR, GA, GB, GN, GR, IT, LU, ML, MR, NL, SE, SN, TD, TG				
US 5162167	A	19921110	US 1990-580886	199009 11
US 5290642	A	19940301	US 1990-580722	199009 11
AU 9185398	A1	19920330	AU 1991-85398	199106 10
AU 647344	B2	19940317		
IL 98709	A1	19950831	IL 1991-98709	199107 02
IN 184407	A	20000819	IN 1991-DE587	199107 02
CA 2090683	AA	19920312	CA 1991-2090683	199107 10
CA 2090683	C	20020910		
EP 549695	A1	19930707	EP 1991-917236	199107 10
EP 549695	B1	19941214		
R: DE, FR, GB, IT, SE				
JP 06502957	T2	19940331	JP 1991-515600	199107 10

PRIORITY APPLN. INFO.: US 1990-580722 A 199009  
11

US 1990-580886 A 199009  
11

WO 1991-US4854 A 199106  
10

AB Fuel cells are manufd. by prepg. binder mixt.-contg. ceramic mixts. for anode, cathode, **electrolyte**, and interconnector; making thin electrode, **electrolyte** and interconnector tapes from resp. mixts.; **laminating anode** and **cathode** tapes to opposite sides of **electrolyte** tapes; forming reaction-gas passages **extending** along the **electrodes**; cutting the **laminates** and the interconnector tapes, heating the laminates and the interconnector tapes to remove the binder mixt. and at least to initiate sintering of the ceramic materials, alternately stacking the laminates and the interconnectors, and bonding the laminates and the interconnectors. Viscous slurries contg. a binder (synthetic rubbers, polymers), a plasticizer (Bu Bz phthalate), a solvent, and the anode or cathode ceramic material may be used for bonding between interconnectors and resp. electrodes. Microcracks, ceramic migration, and slumping are avoided.

IC ICM H01M008-24

ICS H01M008-12

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST solid **electrolyte** fuel cell

IT Ceramic materials and wares

(anodes and cathodes and **electrolytes**, solid oxide-type fuel cells contg., binders for manuf. of, for cracking prevention)

L23 ANSWER 25 OF 25 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1981:129521 HCAPLUS

DOCUMENT NUMBER: 94:129521

TITLE: **Electrolytic cell**

INVENTOR(S): Cunningham, Hugh

PATENT ASSIGNEE(S): PPG Industries, Inc., USA

SOURCE: U.S., 10 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 4248689	A	19810203	US 1979-56494	197907 11

PRIORITY APPLN. INFO.: US 1979-56494 A 197907  
11

AB A cell having an ion permeable diaphragm and suitable for brine **electrolysis** is described. The cell comprises an anode tank of rectangular shape having a floor, top, and sidewalls and open ends with a **plurality of coated metal anode blades extending** upward from the floor and being parallel to the walls (and to each other). The cathode units are at each open end of the anode tank and consist of a cathode tank, a vertical cathode support plate, and a plurality of individual hollow cathode elements interleaved between the anode blades and sepd. from them and having polymeric sheets enveloping each individual cathode element.

IC C25B009-00; C25B015-08; C25B013-08; C25B011-02

INCL 204252000

CC 72-10 (Electrochemistry)  
Section cross-reference(s): 49

ST brine **electrolytic cell** diaphragm; chlorine  
sodium hydroxide electroprodn brine

IT Brines  
(**electrolysis** of, diaphragm cell for)

IT **Electrolytic cells**  
(diaphragm, for brine **electrolysis**)

IT 1310-73-2P, preparation 7782-50-5P, preparation  
RL: PREP (Preparation)  
(manuf. of, by brine **electrolysis**, diaphragm cell for)

=>

? show files

File 2:INSPEC 1898-2006/Aug W3  
(c) 2006 Institution of Electrical Engineers

File 6:NTIS 1964-2006/Aug W3  
(c) 2006 NTIS, Intl Cpyrght All Rights Res

File 8:Ei Compendex(R) 1970-2006/Aug W3  
(c) 2006 Elsevier Eng. Info. Inc.

File 35:Dissertation Abs Online 1861-2006/Jun  
(c) 2006 ProQuest Info&Learning

File 36:MetalBase 1965-20060831  
(c) 2006 The Thomson Corporation

File 56:Computer and Information Systems Abstracts 1966-2006/Aug  
(c) 2006 CSA.

File 57:Electronics & Communications Abstracts 1966-2006/Aug  
(c) 2006 CSA.

File 62:SPIN(R) 1975-2006/Aug W1  
(c) 2006 American Institute of Physics

File 65:Inside Conferences 1993-2006/Aug 31  
(c) 2006 BLDSC all rts. reserv.

File 68:Solid State & Superconductivity Abstracts 1966-2006/Aug  
(c) 2006 CSA.

File 94:JICST-EPlus 1985-2006/May W3  
(c) 2006 Japan Science and Tech Corp(JST)

File 95:TEME-Technology & Management 1989-2006/Aug W4  
(c) 2006 FIZ TECHNIK

File 103:Energy SciTec 1974-2006/Jul B2  
(c) 2006 Contains copyrighted material

File 104:AeroBase 1999-2006/July  
(c) 2006 Contains copyrighted material

File 144:Pascal 1973-2006/Aug W1  
(c) 2006 INIST/CNRS

File 347:JAPIO Dec 1976-2005/Dec(Updated 060404)  
(c) 2006 JPO & JAPIO

File 350:Derwent WPIX 1963-2006/UD=200655  
(c) 2006 The Thomson Corporation

? ds

Set	Items	Description
S1	760836	BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY? OR GALVAN? OR WET OR DRY OR PRIMARY OR SECONDARY) (2N) (CELL OR CELLS)
S2	720619	ELECTROLY?
S3	1588642	LAMIN? OR LAMEL? OR MULTILAYER? OR (MULTI OR MULTIPLE OR PLURAL? OR SEVERAL?) (2N) (LAYER? OR COAT? OR FILM? OR SHEET? OR LEAF?)
S4	2297643	ELECTROD?? OR CATHOD?? OR ANOD??
S5	2406824	HOUSING? OR CASING? OR SHROUD? OR JACKET? OR PACKAG? OR ENCASING? OR SHEATH?
S6	6548837	PROTRUD? OR PROTRUS? OR PROTUBERAT? OR PROJECT? OR EXTEND? OR EXTENS? OR STICK??? (W) OUT
S7	42580	S6(3N) S4
S8	86114	S6(3N) S5
S9	5584	(S7 OR S8) AND S1
S10	22507	S3(2N) S4
S11	138	S9 AND S10
S12	33788	(LEAD OR PB) (2N) S4
S13	16	S11 AND S12
S14	7	S13 AND S2
S15	16	S14 OR S13
S16	16	RD S15 (unique items)

? set hi\*\*\*

HILIGHT set on as '\*\*\*\*'

? t s16/34/1-16

16/34/1 (Item 1 from file: 350)  
 DIALOG(R)File 350:Derwent WPIX  
 (c) 2006 The Thomson Corporation. All rts. reserv.

0015860260 - Drawing available

WPI ACC NO: 2006-391950/200640

Secondary \*\*\*battery\*\*\* for, e.g. camcorders, includes anode having anode active material capable of inserting and extracting electrode reactant and including at least one kind from metal elements or metalloid elements

Patent Assignee: FUKUSHIMA Y (FUKU-I); HASHIMOTO F (HASH-I); SONY CORP (SONY); SUZUKI H (SUZU-I)

Inventor: FUKUSHIMA G; FUKUSHIMA Y; HASHIMOTO F; SUZUKI H

Patent Family (2 patents, 2 countries)

Patent			Application			
Number	Kind	Date	Number	Kind	Date	Update
US 20060115736	A1	20060601	US 2005268033	A	20051107	200640 B
JP 2006134758	A	20060525	JP 2004323997	A	20041108	200640 E

Priority Applications (no., kind, date): JP 2004324002 A 20041108; JP 2004323998 A 20041108; JP 2004323997 A 20041108

#### Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 20060115736	A1	EN	36	21	
JP 2006134758	A	JA	18		

#### Alerting Abstract US A1

NOVELTY - Secondary \*\*\*battery\*\*\* comprises an anode that includes an anode active material capable of inserting and extracting an electrode reactant and including at least one kind from metal elements or metalloid elements as an element.

DESCRIPTION - Secondary \*\*\*battery\*\*\* comprises a spirally wound body formed through \*\*\*laminating\*\*\* a \*\*\*cathode\*\*\* that includes a cathode active material layer on a strip-shaped cathode current collector and an anode having an anode active material layer on a strip-shaped anode current collector with a separator (23) in between, and spirally winding the cathode and the anode. The anode includes an anode active material capable of inserting and extracting an electrode reactant and having at least one kind from metal elements or metalloid elements. The cathode includes an exposed cathode region (21D) in an outer end portion of the cathode, the exposed cathode region in which the cathode current collector is not covered with the cathode active material layer and is exposed. The exposed cathode region includes an insulating protective member (30) on at least one of an outer side and an inner side of the exposed cathode region in a position opposed to an outer end portion of the anode active material layer in a single turn inside the outer end portion.

USE - For portable electronic devices, e.g. camcorders, cellular phones, and laptop computers.

ADVANTAGE - The \*\*\*battery\*\*\* is capable of improving charge-discharge cycle characteristics while maintaining a high capacity.

DESCRIPTION OF DRAWINGS - The figure shows an enlarged sectional view of a part of the spirally wound body.

21D Exposed cathode region

22B Anode active material layer



22D Exposed anode region  
 22B1 Outer end portion  
 23 Separator  
 25 \*\*\*Cathode\*\*\* \*\*\*lead\*\*\*  
 26 \*\*\*Anode\*\*\* \*\*\*lead\*\*\*  
 30 Insulating protective member

#### Technology Focus

**ELECTRICAL POWER AND ENERGY** - Preferred Component: The anode includes an exposed anode region (22D) in an outer end portion (22B1) of the anode, the exposed anode region in which the anode current collector is not covered with the anode active material layer and is exposed, and to which an \*\*\*anode\*\*\* \*\*\*lead\*\*\* is connected, and the exposed \*\*\*anode\*\*\* region \*\*\*extends\*\*\* to a position opposed to a position where the \*\*\*anode\*\*\* \*\*\*lead\*\*\* is connected in one turn inside the position. The cathode includes an outer cathode active material layer on an outer surface of the cathode current collector and an inner cathode active material layer on an inner surface of the cathode current collector. A \*\*\*cathode\*\*\* \*\*\*lead\*\*\* (25) is connected to near a central end portion of the cathode current collector, and the \*\*\*cathode\*\*\* \*\*\*lead\*\*\* is disposed to avoid a region from a central angle of 30(deg) from the central end portion of the inner cathode active material layer in a winding direction R to a central angle of 30(deg) from the central end portion of the inner cathode active material layer in a direction opposite to the winding direction at the center of the spirally wound body. A central angle between a central end portion of the outer cathode active material layer and a central end portion of the inner cathode active material layer at the center of the spirally wound body is  $\geq 72(\text{deg})$ . Preferred Property: The protective member is formed to have a width of 0.5-5 mm larger than the width of the cathode current collector. In the cathode active material layer, a central angle between an outer end portion and a central end portion at a center of the spirally wound body ranges from 0(deg) to -90(deg) inclusive from the central end portion in a winding direction.

**INORGANIC CHEMISTRY** - Preferred Component: As the anode active material, the anode includes a material including at least one of tin and silicon. The anode contains a cobalt tin carbon-containing material in which tin, cobalt and carbon are included, and a carbon content of 9.9-29.7 weight %, and a ratio of cobalt to a total of tin and cobalt of 30-70 weight %.

**POLYMERS** - Preferred Component: The protective member is made of any one of polypropylene and polyethylene terephthalate.

#### Class Codes

##### International Classification (+ Attributes)

##### IPC + Level Value Position Status Version

H01M-0010/40	A	I	L	B	20060101
H01M-0002/14	A	I	F	B	20060101
H01M-0002/26	A	I	L	B	20060101
H01M-0002/34	A	I	F	B	20060101
H01M-0004/02	A	I	L	B	20060101
H01M-0004/38	A	I	L	B	20060101
H01M-0004/58	A	I	L	B	20060101
H01M-0010/36	C	I	L	B	20060101
H01M-0002/20	C	I	F	B	20060101

US Classification, Issued: 429246000, 429094000, 429218100, 429231800

16/34/2 (Item 2 from file: 350)  
 DIALOG(R) File 350:Derwent WPIX  
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0015509703 - Drawing available

WPI ACC NO: 2006-073844/200608

Lithium ion \*\*\*secondary\*\*\* \*\*\*cell\*\*\* has safe vent inserted into through-hole that is formed in cap plate at predetermined temperature

Patent Assignee: MAENG S (MAEN-I); SAMSUNG DENKAN KK (SMSU); YIM H (YIMH-I); SAMSUNG SDI CO LTD (SMSU)

Inventor: IM H; MAENG S; MAENG S R; MAENG S Y; YIM H; RIN K

Patent Family (4 patents, 4 countries)

Patent			Application			
Number	Kind	Date	Number	Kind	Date	Update
JP 2006012814	A	20060112	JP 2005179635	A	20050620	200608 B
US 20060024574	A1	20060202	US 2005158285	A	20050620	200610 E
CN 1713445	A	20051228	CN 200510077704	A	20050622	200634 E
KR 2005121511	A	20051227	KR 200446671	A	20040622	200652 E

Priority Applications (no., kind, date): KR 200446671 A 20040622

#### Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
JP 2006012814	A	JA	12	4	

Alerting Abstract JP A

NOVELTY - The lithium ion \*\*\*secondary\*\*\* \*\*\*cell\*\*\* has a safe vent (148) inserted into a through-hole that is formed in a cap plate (141) at a predetermined temperature.

USE - Lithium ion \*\*\*secondary\*\*\* \*\*\*cell\*\*\*.

ADVANTAGE - Improving safety of the lithium ion \*\*\*secondary\*\*\* \*\*\*cell\*\*\* by inserting safe vent in the through-hole of the cup plate.

DESCRIPTION OF DRAWINGS - The figure shows a sectional view of the lithium ion \*\*\*secondary\*\*\* \*\*\*cell\*\*\*.

110 electrode assembly

111 positive electrode plate

210 cap

141 cap plate

148 safe vent

#### Technology Focus

METALLURGY - The safe vent is made of the metal selected from tin (SN), zinc (ZN), bismuth (Bi) and lead (Pb).

POLYMERS - The safe vent is made of thermoplastic resin selected from group of polyethylene (PE), polypropylene (PP), polystyrene (PS), polyvinyl chloride (PVC), polyvinylidene chloride (PVDC), fluororesin, acrylic resin, poly acetic-acid vinyl resin, polyamide resin, acetal resin, polycarbonate (PC), polyphenylene oxide, polyester, polysulfane and polyimide.

#### Class Codes

International Classification (Main): H01M-010/40, H01M-002/10

(Additional/Secondary): H01M-002/12

International Classification (+ Attributes)

IPC + Level Value Position Status Version

H01M-0010/40 A I L B 20060101

H01M-0002/04 A I L B 20060101

H01M-0002/08 A I F B 20060101

H01M-0002/12 A I F B 20060101

H01M-0002/12 A I L B 20060101

H01M-0002/26 A I L B 20060101

H01M-0010/36 C I L B 20060101

US Classification, Issued: 429053000, 429181000, 429161000, 429174000

16/34/3 (Item 3 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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0014109171 - Drawing available

WPI ACC NO: 2004-293469/200427

Laminate packaging flat cell for electric vehicle, has laminate film formed by combining polymer and metal with each other and power generating unit hermetically sealed by forming thermally welded portion on film

Patent Assignee: NISSAN MOTOR CO LTD (NSMO)

Inventor: ABE T; HORIE H; ITO T; SAITO T; SHIMAMURA O; SUGAWARA H

Patent Family (6 patents, 34 countries)

Patent			Application			
Number	Kind	Date	Number	Kind	Date	Update
US 20040043289	A1	20040304	US 2003645617	A	20030822	200427 B
JP 2004095471	A	20040325	JP 2002257867	A	20020903	200427 E
CN 1495934	A	20040512	CN 2003155777	A	20030902	200452 E
EP 1453118	A2	20040901	EP 200315601	A	20030715	200457 E
JP 3695435	B2	20050914	JP 2002257867	A	20020903	200560 E
JP 2005294270	A	20051020	JP 2002257867	A	20020903	200569 E
			JP 2005144073	A	20050517	

Priority Applications (no., kind, date): JP 2005144073 A 20050517; JP 2002257867 A 20020903

#### Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
US 20040043289	A1	EN	19	10	
JP 2004095471	A	JA	15		
EP 1453118	A2	EN			

Regional Designated States, Original: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LT LU LV MC MK NL PT RO SE SI SK TR

JP 3695435 B2 JA 15 Previously issued patent JP 2004095471

JP 2005294270 A JA 15 Division of application JP 2002257867

#### Alerting Abstract US A1

NOVELTY - The cell has a laminate film (50) formed by combining polymer and metal with each other. A power generating unit is formed of a set of electrode plates and separators and sealed by the film. An \*\*\*electrode\*\*\* terminal \*\*\*lead\*\*\* is coupled to the plate. The power generating unit is hermetically sealed by forming a thermally welded portion on an outer periphery of the film.

DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

1.a \*\*\*battery\*\*\* module

2.a vehicle

3.a method for manufacturing a laminate packaging flat cell.

USE - Used for a camcorder, cellular phone, portable computer, electric vehicle or hybrid car.

ADVANTAGE - The cell makes use of the laminate film formed by combining polymer and metal with each other, thereby enhancing reliability of sealing capability of the cell and ensuring charge/discharge performance when large current is used.

DESCRIPTION OF DRAWINGS - The drawing shows a cross-sectional view of a laminate packaging flat cell.

20 Positive electrode plate

22 Positive terminal lead

30 Spacers  
 42 Negative terminal lead  
 50, 51 Laminate films

## Class Codes

International Classification (Main): H01M-002/02, H01M-002/06, H01M-002/30,  
 H01M-006/46  
 (Additional/Secondary): H01M-010/00, H01M-010/04, H01M-010/40, H01M-002/08  
 , H01M-002/10, H01M-006/42  
 US Classification, Issued: 429162000, 429180000, 429184000, 429153000,  
 029623200, 029623400

16/34/4 (Item 4 from file: 350)  
 DIALOG(R) File 350:Derwent WPIX  
 (c) 2006 The Thomson Corporation. All rts. reserv.

0013357128 - Drawing available  
 WPI ACC NO: 2003-445184/  
 Non-aqueous \*\*\*electrolyte\*\*\* secondary \*\*\*battery\*\*\* for electronic  
 device, has active material layer provided with collector exposure portions  
 distributed radially from angular portion towards protrusion of  
 \*\*\*electrode\*\*\* \*\*\*lead\*\*\*  
 Patent Assignee: JAPAN STORAGE BATTERY CO LTD (NIST)  
 Inventor: FUKUHARA T  
 Patent Family (2 patents, 1 countries)  

Patent Number	Kind	Date	Application Number	Kind	Date	Update
JP 2003151534	A	20030523	JP 2001351724	A	20011116	200342 B
JP 3538648	B2	20040614	JP 2001351724	A	20011116	200439 E

Priority Applications (no., kind, date): JP 2001351724 A 20011116

## Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
JP 2003151534	A	JA	5	2	
JP 3538648	B2	JA	4		Previously issued patent JP 2003151534

## Alerting Abstract JP A

NOVELTY - The \*\*\*battery\*\*\* has positive \*\*\*electrode\*\*\* active material  
 \*\*\*layer\*\*\* with \*\*\*multiple\*\*\* collector exposure portions (14). The  
 exposure portions are distributed radially from angular portion (13a)  
 towards the central protrusion (11A) of a positive \*\*\*electrode\*\*\*  
 \*\*\*lead\*\*\* (11), in the active material layer.

USE - Non-aqueous \*\*\*electrolyte\*\*\* secondary \*\*\*battery\*\*\* for  
 electronic device and communication apparatus.

ADVANTAGE - The collector exposure portions decrease the amount of  
 positive electrode active material, thus equalizing utilization factor of  
 the active material and prevents the deviation that arises in current  
 distribution, thereby suppressing dendrite precipitate and improving  
 endurance of the \*\*\*battery\*\*\*.

DESCRIPTION OF DRAWINGS - The figure shows the electrode plate of the  
 non-aqueous \*\*\*electrolyte\*\*\* secondary \*\*\*battery\*\*\*. (Drawing includes  
 non-English language text).

- 11 positive \*\*\*electrode\*\*\* \*\*\*lead\*\*\*
- 11A central protrusion
- 13a angular portion
- 14 multiple collector exposure portions

## Class Codes

International Classification (Main): H01M-004/02

(Additional/Secondary): H01M-010/40

16/34/5 (Item 5 from file: 350)  
 DIALOG(R)File 350:Derwent WPIX  
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0011060194 - Drawing available

WPI ACC NO: 2001-529857/200158

\*\*\*Battery\*\*\* section for lithium-ion and/or lithium-ion polymer cell, has  
 \*\*\*battery\*\*\* lead with protective layer

Patent Assignee: NGK SPARK PLUG CO LTD (NITS); NTK POWERDEX INC (NTKP-N)

Inventor: SMITH J M; XING X

Patent Family (12 patents, 94 countries)

Patent			Application			
Number	Kind	Date	Number	Kind	Date	Update
WO 2001059855	A1	20010816	WO 2001US4262	A	20010209	200158 B
US 20010021471	A1	20010913	US 2000501197	A	20000210	200160 E
			US 2001778699	A	20010207	
AU 200136843	A	20010820	AU 200136843	A	20010209	200175 E
US 6403262	B1	20020611	US 2000501197	A	20000210	200244 E
US 6475674	B2	20021105	US 2000501197	A	20000210	200276 E
			US 2001778699	A	20010207	
EP 1258044	A1	20021120	EP 2001909049	A	20010209	200301 E
			WO 2001US4262	A	20010209	
KR 2002080418	A	20021023	KR 2002710400	A	20020810	200317 E
TW 490874	A	20020611	TW 2001102909	A	20010227	200321 E
US 20040081890	A1	20040429	US 2000501197	A	20000210	200429 E
			US 2001778699	A	20010207	
			US 2002225063	A	20020821	
JP 2004515879	W	20040527	JP 2001559075	A	20010209	200435 E
			WO 2001US4262	A	20010209	
US 6790557	B2	20040914	US 2000501197	A	20000210	200460 E
			US 2001778699	A	20010207	
			US 2002225063	A	20020821	
AU 2001236843	A8	20050915	AU 2001236843	A	20010209	200569 E

Priority Applications (no., kind, date): US 2002225063 A 20020821; US  
 2000501197 A 20000210; US 2001778699 A 20010207

## Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
WO 2001059855	A1	EN	21	13	
National Designated States,Original: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW					
Regional Designated States,Original: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW					
US 20010021471	A1	EN			C-I-P of application US 2000501197
AU 200136843	A	EN			Based on OPI patent WO 2001059855
US 6475674	B2	EN			C-I-P of application US 2000501197
					C-I-P of patent US 6403262
EP 1258044	A1	EN			PCT Application WO 2001US4262
					Based on OPI patent WO 2001059855
Regional Designated States,Original: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR					
TW 490874	A	ZH			
US 20040081890	A1	EN			C-I-P of application US 2000501197
					Division of application US 2001778699

JP 2004515879 W JA 51 C-I-P of patent US 6403262  
 Division of patent US 6475674  
 PCT Application WO 2001US4262  
 Based on OPI patent WO 2001059855  
 US 6790557 B2 EN C-I-P of application US 2000501197  
 Division of application US 2001778699

AU 2001236843 A8 EN C-I-P of patent US 6403262  
 Division of patent US 6475674  
 Based on OPI patent WO 2001059855

Alerting Abstract WO A1

NOVELTY - A \*\*\*battery\*\*\* section comprises a planar metal mesh layer having a tab portion defining a \*\*\*battery\*\*\* lead. A protective layer is provided on side(s) of the tab portion adjacent an electrode film that is laminated to opposite surfaces of the metal mesh layer. The protective layer comprises an outer polymer layer and an inner adhesive layer.

DESCRIPTION - A \*\*\*battery\*\*\* section for a lithium-ion and/or lithium-ion polymer cell comprises a planar metal mesh layer (26) having a body portion and a coplanar tab portion (28) defining a \*\*\*battery\*\*\* lead that extends from one edge of the mesh layer. An electrode film (24) is laminated to opposite surfaces of the body portion of the metal mesh layer. A protective layer (50), which is provided on the side(s) of the tab portion adjacent the electrode film, comprises an outer polymer layer (52) and an inner adhesive layer (54) adhered to the tab portion.

INDEPENDENT CLAIMS are also included for (A) a method of forming the lead of lithium-ion and/or lithium-ion polymer \*\*\*battery\*\*\*, and (B) a lithium-ion and/or lithium-ion polymer cell employing the inventive \*\*\*battery\*\*\* section. The cell comprises two cathode sections (22) and an anode section (32) between the cathode sections. A separator layer (42) is disposed between the anode section and each of the cathode sections. Each cathode section has a current collector comprising the metal mesh layer. Each metal mesh layer has tab portion \*\*\*extending\*\*\* outwardly beyond the \*\*\*cathode\*\*\* section to form a \*\*\*cathode\*\*\* section \*\*\*lead\*\*\*. The \*\*\*anode\*\*\* section has an anode current collector (36) with a tab portion (38) that \*\*\*extends\*\*\* beyond the \*\*\*anode\*\*\* section to form an \*\*\*anode\*\*\* section \*\*\*lead\*\*\*. The protective layer is provided on the tab portion of each cathode current collector where the tab extends from the sheet of metal mesh. The protective layers are disposed between the tab portions to prevent short-circuiting when the tab portions are pressed together to form a single positive lead.

USE - For lithium-ion and/or lithium-ion polymer cell.

ADVANTAGE - The \*\*\*battery\*\*\* section has protective layer which can prevent short-circuiting during fabrication of lithium-ion and/or lithium-ion polymer cell.

DESCRIPTION OF DRAWINGS - The figure shows a perspective view of the lithium-ion or lithium-ion polymer cell.

22 Cathode sections  
 24 Electrode film  
 26 Metal mesh layer  
 28, 38 Tab portions  
 32 Anode section  
 36 Anode current collector  
 42 Separator layer  
 50 Protective layer  
 52 Polymer layer  
 54 Adhesive layer

Technology Focus

POLYMERS - Preferred Material: The polymer layer is polyimide or

polyester, and the adhesive layer is silicone.

Preferred Dimension: The protective layer is 0.0015-0.003 inch thick. The polymer layer and the adhesive layer are 0.0005-0.0015 and 0.001-0.003 inch thick, respectively.

#### Class Codes

International Classification (Main): H01M-010/40, H01M-002/00, H01M-002/06, H01M-002/14, H01M-002/30, H01M-002/34, H01M-004/70, H01M-004/74

(Additional/Secondary): H01M-010/24, H01M-002/16, H01M-002/26

US Classification, Issued: 429162000, 429180000, 429181000, 029623300, 429241000, 429211000, 429246000, 429231950, 429065000, 429178000, 429181000, 429231950, 429065000, 429178000, 429181000, 429211000, 429241000, 429174000, 429185000

16/34/6 (Item 6 from file: 350)  
DIALOG(R) File 350:Derwent WPIX  
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0010960982 - Drawing available

WPI ACC NO: 2001-584314/200166

Non-aqueous \*\*\*electrolyte\*\*\* secondary \*\*\*battery\*\*\* for use in cellular phones, comprises seal made of thermoplastic material which is fused and inserted into a gap between package end and \*\*\*lead\*\*\* \*\*\*electrode\*\*\*

Patent Assignee: ONO T (ONOT-I); ONOZAKI T (ONOZ-I); SONY CORP (SONY); SUGIYAMA T (SUGI-I)

Inventor: ONO T; ONOZAKI T; ONU T; SUGIYAMA T; SUGIYAMA Y; TAKASHI O; TATSUO O; TSUYOSHI S

Patent Family (8 patents, 30 countries)

Patent			Application			
Number	Kind	Date	Number	Kind	Date	Update
EP 1137093	A2	20010926	EP 2001400770	A	20010323	200166 B
JP 2001266952	A	20010928	JP 200081578	A	20000323	200172 E
CN 1316788	A	20011010	CN 2001119022	A	20010323	200207 E
US 20020012834	A1	20020131	US 2001814632	A	20010322	200210 E
US 6689177	B2	20040210	US 2001814632	A	20010322	200413 E
US 20040081887	A1	20040429	US 2001814632	A	20010322	200429 E
			US 2003690069	A	20031021	
MX 2001002970	A1	20040701	MX 20012970	A	20010322	200545 E
CN 1189970	C	20050216	CN 2001119022	A	20010323	200622 E

Priority Applications (no., kind, date): JP 200081578 A 20000323

#### Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
EP 1137093	A2	EN	12	4	

Regional Designated States, Original: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR

JP 2001266952	A	JA	8
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US 20040081887 A1 EN Division of application US 2001814632

Division of patent US 6689177

#### Alerting Abstract EP A2

NOVELTY - A non-aqueous \*\*\*electrolyte\*\*\* secondary \*\*\*battery\*\*\* comprises a laminating structure, and a package that covers the laminating structure. A \*\*\*lead\*\*\* \*\*\*electrode\*\*\* is joined to the laminating structure and protrudes from an end of the package. A seal is inserted into a gap between the end of the package and the \*\*\*lead\*\*\* \*\*\*electrode\*\*\*. It seals the gap by fusing a thermoplastic material.

DESCRIPTION - A non-aqueous \*\*\*electrolyte\*\*\* secondary \*\*\*battery\*\*\* includes a laminating structure, in which a positive or a negative \*\*\*electrode\*\*\* is \*\*\*laminated\*\*\*. A film-like or sheet-like package (3a, 3b) covers the laminating structure. A \*\*\*lead\*\*\*\*\*electrode\*\*\* (1a, 1b) is joined to the laminating structure and protrudes from an end of the package member. A seal (2a, 2b) is inserted into a gap between the end of the package and the \*\*\*lead\*\*\*\*\*electrode\*\*\*. It seals the gap by fusing a thermoplastic material.

An INDEPENDENT CLAIM is also included for a method of manufacturing the non-aqueous \*\*\*electrolyte\*\*\* secondary \*\*\*battery\*\*\*, comprising heating the seal to above fusion temperature using a heater (6a, 6b), inserting a stripping sheet (4a, 4b) made of \*\*Teflon\*\* between a heater (6a, 6b) and the package or the seal, separating the stripping sheet from the package or the seal, and re-solidifying the fused seal.

USE - The non-aqueous \*\*\*electrolyte\*\*\* secondary \*\*\*battery\*\*\* is used in portable small electronic equipment, e.g. cellular phones and computers.

ADVANTAGE - The non aqueous \*\*\*electrolyte\*\*\*\*\*battery\*\*\* has high productivity, increased durability and excellent hermeticity. It employs a seal made of thermoplastic material, which prevents sealing failures caused by gaps occurring between sides of the \*\*\*lead\*\*\*\*\*electrode\*\*\* and the package member.

DESCRIPTION OF DRAWINGS - The figure shows a schematic view of the lithium ion polymer secondary \*\*\*battery\*\*\*.

1a, 1b \*\*\*Lead\*\*\*\*\*electrode\*\*\*

2a, 2b Seal

3a, 3b Package

4a, 4b Stripping sheet

6a, 6b Heater

#### Technology Focus

ELECTRICAL POWER AND ENERGY - Preferred Components: The non-aqueous \*\*\*electrolyte\*\*\* secondary \*\*\*battery\*\*\* employs a solid \*\*\*electrolyte\*\*\* or preferably a gel-type \*\*\*electrolyte\*\*\*.

INORGANIC CHEMISTRY - Preferred Materials: The positive electrode comprises lithium mix whose main base is of formula (I):

<http://imagesrv.dialog.com/imanager/getimage?ref=Ia276a800570111dabe8e00008361346f&f=351&type=PNG>

M= cobalt, nickel, or manganese.

The negative electrode comprises a non-graphitizing carbon material or a graphite material. The gel-type \*\*\*electrolyte\*\*\* is made of a fluorine macromolecule containing an \*\*\*electrolyte\*\*\* salt and a solvent. The package is made of a metal laminate pack material comprising a package resin, a metal film, and a sealant layer.

#### Class Codes

International Classification (Main): H01M-010/38, H01M-010/40, H01M-002/02, H01M-002/06, H01M-002/08

(Additional/Secondary): H01M-010/04, H01M-002/30, H01M-004/48, H01M-004/50, H01M-004/52, H01M-004/58

US Classification, Issued: 429162000, 429185000, 429231100, 429231800, 429162000, 429181000, 429231100, 429223000, 429224000, 429231300, 429231800, 029623200, 029623400, 029623200, 429162000, 429185000, 029623100

16/34/7 (Item 7 from file: 350)

DIALOG(R) File 350:Derwent WPIX

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0010570453 - Drawing available

WPI ACC NO: 2001-174927/200118

Non-aqueous \*\*\*electrolyte\*\*\* \*\*\*battery\*\*\* for high charging and discharging, has electrode tab integrator or electrode tab fixing component for joining exterior connector terminal with electroconductive connection lead

Patent Assignee: NEC CORP (NIDE)

Inventor: KITAMI T; ZAMA K

Patent Family (1 patents, 1 countries)

Patent			Application			
Number	Kind	Date	Number	Kind	Date	Update
JP 2001006653	A	20010112	JP 1999179672	A	19990625	200118 B

Priority Applications (no., kind, date): JP 1999179672 A 19990625

#### Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
JP 2001006653	A	JA	8	7	

#### Alerting Abstract JP A

NOVELTY - The non-aqueous \*\*\*electrolyte\*\*\* \*\*\*battery\*\*\* (1) has an electrode tab integrator (11) or an electrode tab fixing component (12) for joining an exterior connector terminal with an electroconductive connection \*\*\*lead\*\*\* (15). The \*\*\*electrode\*\*\* tabs (8,10) of the positive electrode (3) and negative electrode (4) are welded to either the electrode tab fixing component or electrode tab integrator.

DESCRIPTION - The electrode tabs are fixed touching the electroconductive surface of the \*\*\*electrode\*\*\* tab integrator, and \*\*\*extended\*\*\* from the end face of a \*\*\*battery\*\*\* unit (6) or negative plate connector without deforming electrode tab integrator or fixing component. The \*\*\*battery\*\*\* unit comprises of \*\*\*laminated\*\*\* positive \*\*\*electrode\*\*\* and negative electrode with a separator (5) in between.

USE - For high \*\*\*battery\*\*\* charging and discharging.

ADVANTAGE - Prevents supply of high electric current to partial electroconductive tab due to equalized impression of electric current to each electroconductive tab. Can be simply manufacture since electrode tabs can be packed without welding. Has improved collector structure, few IR loss and high discharge characteristics.

DESCRIPTION OF DRAWINGS - The figure shows the sectional drawing of the non-aqueous \*\*\*electrolyte\*\*\* \*\*\*battery\*\*\*.

1 Non-aqueous \*\*\*electrolyte\*\*\* \*\*\*battery\*\*\*

3 Positive electrode

4 Negative electrode

5 Separator

6 \*\*\*Battery\*\*\* unit

8,10 Electrode tabs

11 Electrode tab integrator

12 Electrode tab fixing component

15 Electroconductive connection lead

#### Class Codes

International Classification (Main): H01M-002/26

(Additional/Secondary): H01M-010/40

16/34/8 (Item 8 from file: 350)

DIALOG(R) File 350:Derwent WPIX

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0010323831 - Drawing available

WPI ACC NO: 2000-638390/200061

Laminate sheath type \*\*\*battery\*\*\* electrode group fixing device has protective frame, surrounding group, insulated frame-like spacer and arrangement to bond case and electrode group

Patent Assignee: MATSUSHITA DENKI SANGYO KK (MATU); MATSUSHITA ELECTRIC IND CO LTD (MATU)

Inventor: ICHINOSE H; ICHINOSE H M E I C L; KANEDA M; KANEDA M M E I C L; MATSUMASA Y; SUZUKI H; SUZUKI H M E I C L; TSUDA S; TSUDA S M E I C L; YOSHIO H; YOSHIO H M E I C L

Patent Family (11 patents, 22 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
WO 2000059063	A1	20001005	WO 2000JP1873	A	20000327	200061 B
CN 1316114	A	20011003	CN 2000801285	A	20000327	200205 E
EP 1202371	A1	20020502	EP 2000911391	A	20000327	200236 E
			WO 2000JP1873	A	20000327	
JP 2000608464	X	20020709	JP 2000608464	A	20000327	200259 E
			WO 2000JP1873	A	20000327	
EP 1202371	B1	20031008	EP 2000911391	A	20000327	200370 E
			WO 2000JP1873	A	20000327	
DE 60005844	E	20031113	DE 60005844	A	20000327	200382 E
			EP 2000911391	A	20000327	
			WO 2000JP1873	A	20000327	
US 6743546	B1	20040601	WO 2000JP1873	A	20000327	200436 E
			US 2001937554	A	20010926	
JP 3602797	B2	20041215	JP 2000608464	A	20000327	200482 E
			WO 2000JP1873	A	20000327	
CN 1560955	A	20050105	CN 2000801285	A	20000327	200525 E
			CN 200410069667	A	20000327	
CN 1560956	A	20050105	CN 2000801285	A	20000327	200525 E
			CN 200410069668	A	20000327	
CN 1180506	C	20041215	CN 2000801285	A	20000327	200618 E

Priority Applications (no., kind, date): JP 199992576 A 19990331; JP 199983339 A 19990326; JP 199982851 A 19990326; JP 1999361192 A 19991220

#### Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
WO 2000059063	A1	JA	79	40	
National Designated States,Original: CN JP US					
Regional Designated States,Original: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
EP 1202371	A1	EN			PCT Application WO 2000JP1873 Based on OPI patent WO 2000059063
Regional Designated States,Original: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					
JP 2000608464	X	JA			PCT Application WO 2000JP1873 Based on OPI patent WO 2000059063
EP 1202371	B1	EN			PCT Application WO 2000JP1873 Based on OPI patent WO 2000059063
Regional Designated States,Original: DE FR GB IT SE					
DE 60005844	E	DE			Application EP 2000911391 PCT Application WO 2000JP1873 Based on OPI patent EP 1202371 Based on OPI patent WO 2000059063
US 6743546	B1	EN			PCT Application WO 2000JP1873 Based on OPI patent WO 2000059063
JP 3602797	B2	JA	35		PCT Application WO 2000JP1873

CN 1560955      A    ZH      Based on OPI patent    WO 2000059063  
 Division of application    CN 2000801285

CN 1560956      A    ZH      Division of application    CN 2000801285

# Alerting Abstract WO A1

NOVELTY - The \*\*\*battery\*\*\* electrode-group fixing device includes a protective frame attached to the electrode-group (2) in such a manner as to surround the latter. It also has an insulation frame-like spacer (69) received in the sheath case together with the electrode-group. The space in the sheath case (18) is filled on the lead take-out side of the electrode group.

DESCRIPTION - An arrangement for thermally bonding the sheath case and the electrode-group to each other is provided. Alternately, an abutment surface is formed on the sheath case and to abut against the end surface of the electrode-group received in the sheath case .

USE - Laminate sheath type \*\*\*battery\*\*\* that prevents movement of the electrode.

ADVANTAGE - preventing movement of an electrode-group (2) in a sheath case (1,18)

## DESCRIPTION OF DRAWINGS - 2 electrode-group

1,18 sheath case

19,33,38,50,54 protective frame

2 electrode-group

87h abutment surface

87 sheath case.

## Class Codes

International Classification (Main): H01M-002/02

(Additional/Secondary): H01M-010/40

International Classification (+ Attributes)

IPC + Level Value Position Status Version

H01M-0010/02    A    N      R    20060101

H01M-0010/04    A    I      R    20060101

H01M-0002/02    A    I      R    20060101

H01M-0010/02    C    N      R    20060101

H01M-0010/04    C    I      R    20060101

H01M-0002/02    C    I      R    20060101

US Classification, Issued: 429127000, 429129000, 429130000, 429136000,  
 429138000, 429139000, 429146000, 429152000, 429153000, 429162000,  
 429163000, 429177000, 429179000, 429180000, 429184000

16/34/9      (Item 9 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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0009709263 - Drawing available

WPI ACC NO: 1999-529742/199945

Non-aqueous \*\*\*electrolyte\*\*\* secondary \*\*\*battery\*\*\* with increased energy density and reduced defects

Patent Assignee: SONY CORP (SONY); YAMAGUCHI A (YAMA-I)

Inventor: AKIRA Y; YAMAGUCHI A

Patent Family (11 patents, 29 countries)

Patent      Application

Number	Kind	Date	Number	Kind	Date	Update
EP 942484	A1	19990915	EP 1999104615	A	19990309	199945 B
JP 11260415	A	19990924	JP 199857968	A	19980310	199951 E
CN 1228625	A	19990915	CN 1999103957	A	19990310	200001 E
KR 1999077689	A	19991025	KR 19997627	A	19990309	200052 E

EP 942484	B1	20010516	EP 1999104615	A	19990309	200128	E
TW 416159	A	20001221	TW 1999103323	A	19990304	200133	E
DE 69900105	E	20010621	DE 69900105	A	19990309	200143	E
			EP 1999104615	A	19990309		
US 20020004161	A1	20020110	US 1999262325	A	19990304	200208	E
KR 414631	B	20040107	KR 19997627	A	19990309	200427	E
US 6869723	B2	20050322	US 1999262325	A	19990304	200521	E
CN 1120539	C	20030903	CN 1999103957	A	19990310	200550	E

Priority Applications (no., kind, date): JP 199857968 A 19980310

#### Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
EP 942484	A1	EN	21	5	
Regional Designated States,Original: AL AT BE CH CY DE DK ES FI FR GB GR					
IE IT LI LT LU LV MC MK NL PT RO SE SI					
JP 11260415	A	JA	10		
KR 1999077689	A	KO		5	
EP 942484	B1	EN			
Regional Designated States,Original: DE FR GB					
TW 416159	A	ZH			
DE 69900105	E	DE			Application EP 1999104615
					Based on OPI patent EP 942484
KR 414631	B	KO			Previously issued patent KR 99077689

#### Alerting Abstract EP A1

NOVELTY - The \*\*\*battery\*\*\* incorporates a coil \*\*\*electrode\*\*\* formed by \*\*\*laminating\*\*\* elongated positive and negative electrodes through separators such that the outermost layer is the positive \*\*\*electrode\*\*\*. The negative \*\*\*lead\*\*\* is formed at the negative electrode at a position which is further forward than the outermost end of the positive \*\*\*electrode\*\*\* without a \*\*\*projection\*\*\* being formed which eliminates a possible source of shorting.

DESCRIPTION - The non-aqueous \*\*\*electrolyte\*\*\* secondary \*\*\*battery\*\*\* comprises a coil \*\*\*electrode\*\*\* formed by \*\*\*laminating\*\*\* an elongated positive electrode with a positive electrode mix layer on at least one main surface of a collector and an elongated negative electrode with a negative electrode mix on at least one main surface such that the positive electrode is on the outside of the coil.

The positive mix layer is formed only at the position adjacent the outermost end of the positive electrode and/or the position adjacent to the innermost end, and not formed on the collector at the outermost end of the electrode, and only the positive electrode collector is formed. The negative electrode mix is not formed on the collector at the outermost end of the negative electrode and only the negative collector is formed. The outermost end of the negative electrode collector is positioned at the outermost end of the electrode and is, in the direction from the inner to outer portion of the coil, positioned more forwards than the outermost end of the positive electrode collector.

USE - Non-aqueous \*\*\*electrolyte\*\*\* secondary \*\*\*batteries\*\*\*.

ADVANTAGE - The \*\*\*battery\*\*\* has a reduced quantity of non-reacted active material for the negative electrode to more effectively use the volume of the \*\*\*battery\*\*\* to raise energy density, lengthen cycle life, prevent defects, and improve reliability.

DESCRIPTION OF DRAWINGS - The drawing shows a section through a \*\*\*battery\*\*\* including; (1) positive electrode collector, (2a) positive electrode mix layer, (2b) (3) positive electrode, (3a) outermost end (3b) innermost end, (4) negative electrode collector, (5a) negative electrode mix layer, (6) negative electrode, (6a) outermost end, (7) separator, (15)

coil electrode.

#### Technology Focus

**ELECTRICAL POWER AND ENERGY - Preferred \*\*\*battery\*\*\*:** The coil electrode incorporates a negative \*\*\*electrode\*\*\*\*\*lead\*\*\* adjacent to and more forward than the outermost end of the collector. The coil electrode has a structure that distance L from the outermost end of the negative electrode collector to the outermost end of the positive electrode collector in a fore - and - aft direction satisfies the relationship  $0 \leq L \leq \pi d$  (d = coil diameter). The negative electrode material is at least one of crystalline and amorphous metal oxide which permit doping / dedoping lithium ions. The positive electrode mix contains a conductive material and a binder.

**INORGANIC CHEMISTRY - Preferred \*\*\*battery\*\*\*:** The positive electrode material is at least one LiMO<sub>2</sub> (M = at least one of cobalt, nickel, manganese, iron, aluminum, vanadium and titanium) and interlayer compounds each containing Li. The positive electrode collector is at least one of aluminum, stainless steel, and nickel, and the negative electrode collector is at least one of copper, stainless steel, and nickel. The \*\*\*electrolyte\*\*\* is at least one of LiClO<sub>4</sub>, LiAsF<sub>6</sub>, LiPF<sub>6</sub>, LiBF<sub>4</sub>, LiB(C<sub>6</sub>H<sub>5</sub>)<sub>4</sub>, LiCl, LiBr, LiSO<sub>3</sub>CH<sub>3</sub>, and LiSO<sub>3</sub>CF<sub>3</sub>.

**ORGANIC CHEMISTRY - Preferred \*\*\*battery\*\*\*:** The non-aqueous \*\*\*electrolyte\*\*\* is prepared by dissolving an \*\*\*electrolyte\*\*\* in at least one of propylene carbonate, ethylene carbonate, 1,2-dimethoxyethane, 1,2-diethoxyethane, diethylcarbonate, gamma-butyrolactone, tetrahydrofuran, 1,3-dioxane, 4-methyl-1,3-dioxolane, diethylether, sulfolane, methylsulfolane, acetonitrile, and propionitrile.

**POLYMERS - Preferred \*\*\*battery\*\*\*:** The separator is at least one of polyethylene and polypropylene.

#### Extension Abstract

**EXAMPLE -** Pitch coke was prepared by calcining petroleum pitch at 1000 (deg)C in an inert atmosphere. 90 parts of the coke and 10 parts polyvinylidene fluoride PVDF were mixed to form the negative electrode mix which was dispersed in N-methylpyrrolidone solvent and coated 105 mum thick on both sides of a 10 mum thick copper foil. The foil was then dried and compression molded to form a 41.5 mm x 250 mm electrode. No coating was applied to the collector on the outermost end of the electrode. The positive electrode material was formed by calcining 0.05 mole lithium carbonate and 1 mole cobalt carbonate at 900 (deg)C for 5 hr in air to form LiCoO<sub>2</sub>. Then 91 parts LiCoO<sub>2</sub>, 6 parts graphite, 3 parts PVDF were dispersed in N-methylpyrrolidone and coated 80 mum thick onto both sides of a 20 mum thick aluminum foil, and dried and compression molded to form an electrode 39.5 mm wide with a portion 167 mm long with coating on both sides and with an uncoated portion 80 mm long at each end. Then the electrodes and two small pore polypropylene film separators 25 mum thick and 44 mm wide were laminated and coiled to form an electrode as per the claimed structure. The outer diameter of the coil = 13 mm and the inner hollow portion = 3.5 mm, distance L = 35 mm. The coil was placed in a nickel plated iron can with insulating plates on top and bottom ends. A positive \*\*\*electrode\*\*\* \*\*\*lead\*\*\* was connected to the \*\*\*battery\*\*\* cover and the negative \*\*\*electrode\*\*\*\*\*lead\*\*\* connected to the can by welding. 3 g of Non-aqueous \*\*\*electrolyte\*\*\* consisting of 1 mole / l LiPF<sub>6</sub> in 1 : 1 propylene carbonate and diethyl carbonate was injected into the can and the can hermetically sealed. The \*\*\*battery\*\*\* had an energy density ratio = 100 % with Defective = 3 % after charging for 8 hr at 4.2 V and 300 mA, and then discharging with load = 600 mA to 2.75 V

#### Class Codes

International Classification (Main): H01M-010/02, H01M-010/40, H01M-004/70  
(Additional/Secondary): H01M-010/04, H01M-010/36, H01M-002/22, H01M-004/02

, H01M-004/48

US Classification, Issued: 429094000, 429231100, 429231200, 429231300,  
429324000, 429094000, 429212000, 429231100, 429233000

16/34/10 (Item 10 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
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0009383647

WPI ACC NO: 1999-318847/

\*\*\*Electrode\*\*\* \*\*\*lead\*\*\* structure of lithium-ion secondary \*\*\*battery\*\*\*  
- has deformation prevention portion at base end

Patent Assignee: SONY CORP (SONY)

Inventor: AKAIKE Y; KUBO T; SAGA K; TAKEDA S

Patent Family (1 patents, 1 countries)

Patent Application

Number	Kind	Date	Number	Kind	Date	Update
JP 11111326	A	19990423	JP 1997266182	A	19970930	199927 B

Priority Applications (no., kind, date): JP 1997266182 A 19970930

#### Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
JP 11111326	A	JA	9	23	

#### Alerting Abstract JP A

NOVELTY - The coil element (7) is made of \*\*\*laminated\*\*\* \*\*\*electrode\*\*\* sheet that is wound on a cylindrical casing. The \*\*\*lead\*\*\* of \*\*\*electrode\*\*\* \*\*\*protrudes\*\*\* from the center of coil element. A deformation prevention portion (8) is provided at the base end of the positive \*\*\*lead\*\*\* \*\*\*electrode\*\*\* (3).

USE - For lithium-ion secondary \*\*\*battery\*\*\*.

ADVANTAGE - Assembly error and flaws are avoided during manufacture of \*\*\*batteries\*\*\*. Due to absence of stress during folding \*\*\*electrode\*\*\* \*\*\*lead\*\*\* is easily folded.

ADVANTAGE - DESCRIPTION OF DRAWING - The figure shows the perspective view of \*\*\*electrode\*\*\* \*\*\*lead\*\*\* structure. (3) Positive \*\*\*lead\*\*\* \*\*\*electrode\*\*\*; (7) Coil element; (8) Deformation prevention portion.

#### Documentation Abstract

NOVELTY - The coil element (7) is made of \*\*\*laminated\*\*\*\*\*electrode\*\*\* sheet that is wound on a cylindrical casing. The \*\*\*lead\*\*\* of \*\*\*electrode\*\*\*\*\*protrudes\*\*\* from the center of coil element. A deformation prevention portion (8) is provided at the base end of the positive \*\*\*lead\*\*\*\*\*electrode\*\*\* (3).

USE - For lithium-ion secondary \*\*\*battery\*\*\*.

ADVANTAGE - Assembly error and flaws are avoided during manufacture of \*\*\*batteries\*\*\*. Due to absence of stress during folding \*\*\*electrode\*\*\* \*\*\*lead\*\*\* is easily folded.

DESCRIPTION OF DRAWING - The figure shows the perspective view of \*\*\*electrode\*\*\*\*\*lead\*\*\* structure. (3) Positive \*\*\*lead\*\*\*\*\*electrode\*\*\*; (7) Coil element; (8) Deformation prevention portion.

<http://imagesrv.dialog.com/manager/getimage?ref=I95759760649411da847f00008361346f&f=351&type=PNG>

#### Class Codes

International Classification (Main): H01M-010/04

(Additional/Secondary): H01M-010/40, H01M-002/26, H01M-006/02

16/34/11 (Item 11 from file: 350)  
 DIALOG(R)File 350:Derwent WPIX  
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0009383590

WPI ACC NO: 1999-318789/199927

Cylindrical non-aqueous \*\*\*electrolytic\*\*\* \*\*\*battery\*\*\* manufacture method  
 for electric vehicle - involves laser welding of lead attachment portions  
 of anode and cathode with respective leads

Patent Assignee: SANYO ELECTRIC CO LTD (SAOL)

Inventor: INOMATA H; NAKANISHI N; NISHIO K; NOGAMI M; YONEZU I

Patent Family (3 patents, 2 countries)

Patent			Application			
Number	Kind	Date	Number	Kind	Date	Update
JP 11111261	A	19990423	JP 1997266172	A	19970930	199927 B
US 6193765	B1	20010227	US 1998163015	A	19980930	200114 E
JP 3547953	B2	20040728	JP 1997266172	A	19970930	200449 E

Priority Applications (no., kind, date): JP 1997266172 A 19970930

#### Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
JP 11111261	A	JA	6	7	
JP 3547953	B2	JA	9		Previously issued patent JP 11111261

#### Alerting Abstract JP A

NOVELTY - The anode (1) and a cathode (2) are wound in shape of whorl through a separator (3). The lead attachment portions (1c,2c) of \*\*\*anode\*\*\* and \*\*\*cathode\*\*\* are \*\*\*protruded\*\*\* from edge of the separator. The lead attachment portions are welded to the leads by radiation of laser through holes in a metal plates (5,7).

DETAILED DESCRIPTION - The anode has the active material layer (1b) on both sides of the strip like anode collector (1a). Similarly, the cathode has the active material layer (2b) on the both sides of the strip like cathode collector (2a). The diameter of the laser spot is larger than pole size of the metal plate.

USE - For electric vehicle.

ADVANTAGE - Reduces internal resistance of \*\*\*battery\*\*\* so that its output density is increased. Prevents short circuit of electrodes. Improves productivity by avoiding need for reinforcement of lead attachment portion.

ADVANTAGE - DESCRIPTION OF DRAWING - The figure shows \*\*\*lamination\*\*\* of \*\*\*anode\*\*\* and cathode via separator. (1) Anode (1a) Anode collector; (1b) Anode active material layer; (1c,2c) Lead attachment portion; (2) Cathode; (2a) Cathode collector; (2b) Cathode active material layer; (3) Separator; (5,7) Punching metal plates; (6,2) Lead.

#### Documentation Abstract

NOVELTY - The anode (1) and a cathode (2) are wound in shape of whorl through a separator (3). The lead attachment portions (1c,2c) of \*\*\*anode\*\*\* and \*\*\*cathode\*\*\* are \*\*\*protruded\*\*\* from edge of the separator. The lead attachment portions are welded to the leads by radiation of laser through holes in a metal plates (5,7).

DETAILED DESCRIPTION - The anode has the active material layer (1b) on both sides of the strip like anode collector (1a). Similarly, the cathode has the active material layer (2b) on the both sides of the strip like cathode collector (2a). The diameter of the laser spot is larger than pole size of the metal plate.

USE - For electric vehicle.

ADVANTAGE - Reduces internal resistance of \*\*\*battery\*\*\* so that its

output density is increased. Prevents short circuit of electrodes. Improves productivity by avoiding need for reinforcement of lead attachment portion.

DESCRIPTION OF DRAWING - The figure shows \*\*\*lamination\*\*\* of \*\*\*anode\*\*\* and cathode via separator. (1) Anode (1a) Anode collector; (1b) Anode active material layer; (1c,2c) Lead attachment portion; (2) Cathode; (2a) Cathode collector; (2b) Cathode active material layer; (3) Separator; (5,7) Punching metal plates; (6,2) Lead.

<http://imagesrv.dialog.com/imanager/getimage?ref=I9496d020649411da847f00008361346f&f=351&type=PNG>

#### Class Codes

International Classification (Main): H01M-002/26, H01M-006/02

(Additional/Secondary): H01M-010/04, H01M-010/40, H01M-002/22

US Classification, Issued: 029623100, 429121000, 429122000, 429161000, 429211000

16/34/12 (Item 12 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
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0008807992 - Drawing available

WPI ACC NO: 1998-353392/

Winding type secondary \*\*\*battery\*\*\* e.g. containing lithium ion or nickel-maleic hydrazide - has lead take off connections which are arranged in mutually opposing manner along longitudinal direction by side of positive and negative electrodes

Patent Assignee: TOYOTA JIDOSHA KK (TOYT)

Inventor: KAWAMOTO K

Patent Family (1 patents, 1 countries)

Patent

Application

Number	Kind	Date	Number	Kind	Date	Update
JP 10135079	A	19980522	JP 1996291855	A	19961101	199831 B

Priority Applications (no., kind, date): JP 1996291855 A 19961101

#### Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
JP 10135079	A	JA	4	5	

#### Alerting Abstract JP A

The secondary \*\*\*battery\*\*\* comprises a double layered capacitor structure which includes rectangular positive and negative \*\*\*electrodes\*\*\* which are \*\*\*laminated\*\*\* through a separator (26). The electrodes are polarizable and are provided with an active material (16) on either sides of a collector (14). The lead take off connections (22,24) by which the \*\*\*electrodes\*\*\* are \*\*\*extended\*\*\*, are formed on one end side along the longitudinal directions, in the width direction of the positive or negative \*\*\*electrode\*\*\*. The \*\*\*lead\*\*\* take off connections are arranged in mutually opposing manner along the longitudinal direction by either of the electrodes.

ADVANTAGE - Enlarges electrostatic capacitance for every unit product. Reduces resistance of lead take off connection.

#### Documentation Abstract

The secondary \*\*\*battery\*\*\* comprises a double layered capacitor structure which includes rectangular positive and negative \*\*\*electrodes\*\*\* which are \*\*\*laminated\*\*\* through a separator (26). The electrodes are polarizable and are provided with an active material (16) on either sides



of a collector (14). The lead take off connections (22,24) by which the \*\*\*electrodes\*\*\* are \*\*\*extended\*\*\*, are formed on one end side along the longitudinal directions, in the width direction of the positive or negative \*\*\*electrode\*\*\*. The \*\*\*lead\*\*\* take off connections are arranged in mutually opposing manner along the longitudinal direction by either of the electrodes.

ADVANTAGE - Enlarges electrostatic capacitance for every unit product. Reduces resistance of lead take off connection.

#### Class Codes

International Classification (Main): H01G-009/016

(Additional/Secondary): H01M-010/04, H01M-010/40

16/34/13 (Item 13 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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0008464650

WPI ACC NO: 1997-435403/199740

\*\*\*Electrochemical\*\*\* \*\*\*cell\*\*\* fabrication - in which the anode and cathode are separated by a larger polymeric \*\*\*electrolyte\*\*\* layer to prevent contact between the current collectors

Patent Assignee: VALENCE TECHNOLOGY INC (VALE-N)

Inventor: GOGLIN E L; GOGOLIN E L; HOLMES D B; VELASQUEZ D A

Patent Family (11 patents, 71 countries)

Patent			Application			
Number	Kind	Date	Number	Kind	Date	Update
WO 1997031400	A1	19970828	WO 1997US2305	A	19970220	199740 B
US 5670273	A	19970923	US 1996603894	A	19960222	199744 E
AU 199721251	A	19970910	AU 199721251	A	19970220	199802 E
US 5746781	A	19980505	US 1996603894	A	19960222	199825 E
			US 1996630983	A	19960412	
EP 882313	A1	19981209	EP 1997906601	A	19970220	199902 E
			WO 1997US2305	A	19970220	
JP 2000505585	W	20000509	JP 1997530234	A	19970220	200032 E
			WO 1997US2305	A	19970220	
KR 1999087154	A	19991215	WO 1997US2305	A	19970220	200056 E
			KR 1998706547	A	19980821	
US 6467156	B1	20021022	US 1996603894	A	19960222	200273 E
			US 1996630985	A	19960412	
EP 1311016	A2	20030514	EP 1997906601	A	19970220	200333 E
			EP 20031317	A	19970220	
EP 882313	B1	20030709	EP 1997906601	A	19970220	200353 E
			WO 1997US2305	A	19970220	
			EP 20031317	A	19970220	
DE 69723425	E	20030814	DE 69723425	A	19970220	200361 E
			EP 1997906601	A	19970220	
			WO 1997US2305	A	19970220	

Priority Applications (no., kind, date): US 1996630985 A 19960412; US 1996603894 A 19960222; US 1996630983 A 19960412

#### Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
WO 1997031400	A1	EN	51	4	

National Designated States,Original: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE HU IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG US UZ VN

Regional Designated States,Original: AT BE CH DE DK EA ES FI FR GB GR IE  
IT KE LS LU MC MW NL OA PT SD SE SZ UG

US 5670273 A EN 9 2  
AU 199721251 A EN Based on OPI patent WO 1997031400  
US 5746781 A EN 12 C-I-P of application US 1996603894  
C-I-P of patent US 5670273  
EP 882313 A1 EN PCT Application WO 1997US2305  
Based on OPI patent WO 1997031400  
Regional Designated States,Original: AT BE CH DE DK ES FI FR GB GR IE IT  
LI LU MC NL PT SE  
JP 2000505585 W JA 42 PCT Application WO 1997US2305  
Based on OPI patent WO 1997031400  
KR 1999087154 A KO 4 PCT Application WO 1997US2305  
Based on OPI patent WO 1997031400  
US 6467156 B1 EN C-I-P of application US 1996603894  
C-I-P of patent US 5670273  
EP 1311016 A2 EN Division of application EP 1997906601

Division of patent EP 882313

Regional Designated States,Original: AT BE CH DE DK ES FI FR GB GR IE IT  
LI LU MC NL PT SE

EP 882313 B1 EN PCT Application WO 1997US2305  
Related to application EP 20031317  
Related to patent EP 1311016  
Based on OPI patent WO 1997031400

Regional Designated States,Original: AT BE CH DE DK ES FI FR GB GR IE IT  
LI LU MC NL PT SE

DE 69723425 E DE Application EP 1997906601  
PCT Application WO 1997US2305  
Based on OPI patent EP 882313  
Based on OPI patent WO 1997031400

#### Alerting Abstract WO A1

A method of preparing an \*\*\*electrochemical\*\*\* \*\*\*cell\*\*\* comprises: (a) forming an anode film onto at least one surface of an anode current collector (11) to form an anode (10); (b) forming a cathode film onto at least one surface of a cathode current collector (31) to form a cathode (30); (c) interposing a polymeric layer (20) containing an \*\*\*electrolyte\*\*\* solution between the anode and the cathode such that the polymeric \*\*\*electrolyte\*\*\* layer has a larger surface area than the anode and cathode films, and an exposed strip of \*\*\*electrolyte\*\*\* layer is formed, which serves as a barrier to direct contact between the anode and cathode current collectors. The anode film is formed on both surfaces of the anode current collector and/or the cathode film is formed on both surface of the cathode current collector.

USE - For making solid, non-aqueous \*\*\*electrochemical\*\*\* \*\*\*cells\*\*\*.

ADVANTAGE - Allowing the polymeric \*\*\*electrolyte\*\*\* layer to have a protruding strip around its perimeter provides a non-conducting, physical barrier between adjacent anode and cathode current collectors and reduces the likelihood of short circuits.

#### Documentation Abstract

A method of preparing an \*\*\*electrochemical\*\*\* \*\*\*cell\*\*\* comprises:  
(a) forming an anode film onto at least one surface of an anode current collector (11) to form an anode (10);  
(b) forming a cathode film onto at least one surface of a cathode current collector (31) to form a cathode (30);  
(c) interposing a polymeric layer (20) containing an \*\*\*electrolyte\*\*\* solution between the anode and the cathode such that the polymeric \*\*\*electrolyte\*\*\* layer has a larger surface area than the anode and

cathode films, and an exposed strip of \*\*\*electrolyte\*\*\* layer is formed, which serves as a barrier to direct contact between the anode and cathode current collectors. The anode film is formed on both surfaces of the anode current collector and/or the cathode film is formed on both surface of the cathode current collector.

Also claimed are:

- (1) a method of preparing an \*\*\*electrochemical\*\*\*\*\*cell\*\*\*;
- (2) an apparatus for preparing an \*\*\*electrochemical\*\*\*\*\*cell\*\*\*; and
- (3) an apparatus for activating an \*\*\*electrochemical\*\*\*\*\*cell\*\*\*

comprising:

- (a) a first filling station for \*\*\*batteries\*\*\* of cells;
- (b) one or more subsequent filling stations downstream of the first, where amounts of \*\*\*electrolyte\*\*\* equal to or less than the amount added at the previous filling station are added to the \*\*\*batteries\*\*\*; and
- (c) a means of transporting one or more bicell \*\*\*batteries\*\*\* to and from the filling stations.

USE - For making solid, non-aqueous \*\*\*electrochemical\*\*\*\*\*cells\*\*\*.

ADVANTAGE - Allowing the polymeric \*\*\*electrolyte\*\*\* layer to have a protruding strip around its perimeter provides a non-conducting, physical barrier between adjacent anode and cathode current collectors and reduces the likelihood of short circuits.

CLAIMED METHOD - The cell preparation method comprises:

- (A) preparing a polymeric layer comprising a first plasticiser;
- (B) covering at least one surface (as above) of an anode current collector with a layer of anode material comprising a first polymer, an intercalation carbon material and a second plasticiser to form an anode precursor such that each layer of the anode material has a smaller surface area than the above polymeric layer;
- (C) covering at least one surface (as above) of a cathode current collector with a layer of cathode material comprising a second polymer, a cathode active material and a third plasticiser to form a cathode precursor such that each later of the cathode material has a smaller surface area than the above polymeric layer;
- (D) placing the polymeric layer between the electrodes to form a barrier against direct contact, as above;
- (E) removing the 3 plasticisers; and
- (F) placing an \*\*\*electrolyte\*\*\* solution comprising an \*\*\*electrolyte\*\*\* solvent and an inorganic salt into the anode and cathode precursors and the polymeric layer.

CLAIMED APPARATUS - The apparatus for preparing the \*\*\*electrochemical\*\*\* \*\*\*cell\*\*\* comprises:

- (I) a first lamination station where an anode current collector having an \*\*\*extending\*\*\*\*\*anode\*\*\* tab is \*\*\*laminated\*\*\* to an \*\*\*anode\*\*\* precursor as in step (B) above;
- (II) a second lamination station where a cathode current collector having an \*\*\*extending\*\*\*\*\*cathode\*\*\* tab is \*\*\*laminated\*\*\* to a \*\*\*cathode\*\*\* precursor as in step (C) above;
- (III) an assembly station where a polymeric layer is placed between the electrodes as in step (D) above;
- (IV) a fusion station where the polymeric layer is fused to the anode and cathode precursors to form a bicell \*\*\*battery\*\*\*;
- (V) a stacking station where multiple bicell \*\*\*batteries\*\*\* are stacked one on top of the other;
- (VI) a welding station where multiple anode tabs of the stack are welded to one another and to a conductive \*\*\*anode\*\*\*\*\*lead\*\*\*, and multiple \*\*\*cathode\*\*\* tabs are welded to one another and to a conductive \*\*\*cathode\*\*\*\*\*lead\*\*\*;
- (VII) an extraction station down stream of the welding station, where the 3 plasticisers are extracted as in step (E) above;
- (VIII) an installation station downstream of the extraction station,

where the stack is installed in a recess in a stack receptacle such that (parts of) the \*\*\*anode\*\*\* and \*\*\*cathode\*\*\* leads \*\*\*extend\*\*\* beyond the outer periphery of the stack receptacle;

(IX) a filling station where an \*\*\*electrolyte\*\*\* solvent and an inorganic salt are filled into the receptacle, the anode and cathode precursors and the polymeric layer; and

(X) a closing station where a top is closed over the recess in the stack receptacle such that the parts of the anode and cathode leads are disposed outside the periphery of the closed stack receptacle.

PREFERRED \*\*\*ELECTROCHEMICAL\*\*\*CELL\*\*\* - Films are formed on both sides of the anode and cathode current collectors. The perimeters of the current collectors are flush with the perimeters of the films on them. The current collectors comprise an integral anode (12, 50) or cathode (32, 60) tab. The anode and cathode current collectors comprise copper and aluminium resp. The anode film is a carbon material selected from graphite, cokes and mesocarbons. The cathode film is selected from lithiated cobalt, manganese or nickel oxides and mixtures.

PREFERRED CELL PREPARATION - The anode and cathode materials and the polymeric layer all further comprise an inert liquid solvent, which is removed before step (f). Acetone is preferred. The 3 plasticisers comprise dibutyl phthalate.

PREFERRED PREPARATION APPARATUS - The apparatus may further comprise a third laminating station, where a second cathode current collector is laminated as for the first one. At the assembling station, another polymeric layer is added to separate the anode from the second cathode and at the fusing station, the second polymeric layer is fused to the anode precursor and the second cathode precursor.

PREFERRED ACTIVATION APPARATUS - The amount of \*\*\*electrolyte\*\*\* solution added at each filling station is small enough such that the solution contacts neither the \*\*\*anode\*\*\* nor the \*\*\*cathode\*\*\*. The time period between successive filling steps is long enough to allow each amount of added \*\*\*electrolyte\*\*\* to be completely absorbed by the pores of the anode and cathode precursors and the polymeric layer before further \*\*\*electrolyte\*\*\* solution is added. The transporting means includes an intermittently or continuously moveable conveyor device. The time intervals between fillings at any 2 successive filling stations are the same. More than half of the total amount of \*\*\*electrolyte\*\*\* added at all of the filling stations is added at the first filling station.

EXAMPLE - 6.8 g of "Kynar Flex" 2801 (RTM: copolymer of vinylidene difluoride and hexafluoropropylene, mol. wt. 125,000) was stirred in 20 g of acetone for 24 hrs. Separately, a mixture of 23.4 g of "SFG-15" (RTM: graphitised mesocarbon microbeads) and 0.9 g of "Super P" (RTM: carbon black) was added to 60 g of acetone, 10.5 g of dibutyl phthalate and 0.5 g of "Pluronic" FC68 (RTM: surfactant). After mixing under high shear (10,000 rpm) for 30 mins. the graphite mixture was mixed with to the above polymer mixture under low shear. Part of the acetone was allowed to evaporate before the slurry was laminated onto both sides of an anode current collector comprising a 50  $\mu$ m thick sheet of expanded copper. The rest of the acetone was then evaporated.

A cathode mixture was prepared by adding 28.9 g of a 1:1 by weight mixture of  $\text{Li}_x\text{Mn}_{2-2x}\text{O}_4$  (spinel), in which  $0 \leq x < 2$ , and  $\text{Li}_y\text{-}\alpha\text{-MnO}_2$ , in which  $0 \leq y < 1$ , and 2.4 g of the above carbon black to 60 g of acetone, 8.7 g of dibutyl phthalate and 0.5 g of the above surfactant. The mixture was blended as above then mixed with a binder comprising 4.4 g of the above copolymer and 15 ml of acetone. The cathode slurry was applied as above to a cathode current collector comprising a sheet of 50  $\mu$ m thick expanded aluminium.

A polymeric matrix was formed by casting a slurry comprising acetone, dibutyl phthalate, silanised fumed  $\text{SiO}_2$  and the above copolymer onto a carrier web and allowing the acetone to evaporate. The slurry was mixed

under low shear conditions to avoid degrading the polymer.

The components of the cell were then assembled as shown in the figures. The strip (21) extended 1-2.5 mm from the edge of the anode and cathode precursors. Except for the strip (21) and the tabs (12, 50/32, 60), the side surface of the cell precursor was continuous or flush.

<http://imagesrv.dialog.com/manager/getimage?ref=I2a08c7e053dc11dabb2000008361346f&f=351&type=PNG>  
(AA)

#### Class Codes

International Classification (Main): B23P-019/00, H01M-010/04, H01M-010/40, H01M-006/12

(Additional/Secondary): H01M-004/02, H01M-004/04, H01M-006/18, H01M-006/46

US Classification, Issued: 429162000, 029623100, 029730000, 029730000, 029623100, 429304000

16/34/14 (Item 14 from file: 350)  
DIALOG(R)File 350:Derwent WPIX  
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0007728837

WPI ACC NO: 1996-352132/

Electrode body for closed type square \*\*\*battery\*\*\* - comprises protrusion piece facing \*\*\*electrode\*\*\* \*\*\*lead\*\*\* of reinforcing sheet and wound around outside of \*\*\*laminated\*\*\* \*\*\*electrode\*\*\* leads

Patent Assignee: SONY CORP (SONY)

Inventor: NISHIKAWA H; TAKAHASHI H

Patent Family (1 patents, 1 countries)

Patent

Application

Number	Kind	Date	Number	Kind	Date	Update
JP 8167408	A	19960625	JP 1994332831	A	19941215	199635 B

Priority Applications (no., kind, date): JP 1994332831 A 19941215

#### Patent Details

Number	Kind	Lan	Pg	Dwg	Filing Notes
JP 8167408	A	JA	5	7	

#### Alerting Abstract JP A

A protrusion piece (5) is situated facing an \*\*\*electrode\*\*\* \*\*\*lead\*\*\* (3a) of a reinforcing sheet (2). The protrusion piece (5) is wound around the outside of the \*\*\*laminated\*\*\* \*\*\*electrode\*\*\* leads (3a) which simultaneously bound. A weld electrode is brought into contact with the \*\*\*electrode\*\*\* leads through the \*\*\*protrusion\*\*\* piece (5). The adjoining electrode leads (3a) and the \*\*\*electrode\*\*\* \*\*\*lead\*\*\* (3a) and the protrusion piece (5) are welded together for integral formation.

ADVANTAGE - Productivity and reliability are improved.

#### Documentation Abstract

A protrusion piece (5) is situated facing an \*\*\*electrode\*\*\* \*\*\*lead\*\*\* (3a) of a reinforcing sheet (2). The protrusion piece (5) is wound around the outside of the \*\*\*laminated\*\*\* \*\*\*electrode\*\*\* leads (3a) which simultaneously bound. A weld electrode is brought into contact with the \*\*\*electrode\*\*\* leads through the \*\*\*protrusion\*\*\* piece (5). The adjoining electrode leads (3a) and the \*\*\*electrode\*\*\* \*\*\*lead\*\*\* (3a) and the protrusion piece (5) are welded together for integral formation.

ADVANTAGE - Productivity and reliability are improved. (MM)

## Class Codes

International Classification (Main): H01M-002/26  
 (Additional/Secondary): H01M-010/04

16/34/15 (Item 15 from file: 350)  
 DIALOG(R)File 350:Derwent WPIX  
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0007625660 - Drawing available

WPI ACC NO: 1996-244191/

Lithium ion sec. \*\*\*battery\*\*\* preventing short circuit - comprises separators in positive \*\*\*electrode\*\*\* \*\*\*lead\*\*\* \*\*\*protruding\*\*\* more than the negative electrode

Patent Assignee: SONY CORP (SONY)

Inventor: ANZAI C; KOGA Y; TAKAHASHI H; WATANABE A

Patent Family (1 patents, 1 countries)

Patent		Application	
Number	Kind	Date	Update
JP 8096839	A	19960412	199625 B

Priority Applications (no., kind, date): JP 1994228283 A 19940922

## Patent Details

Number	Kind	Lan	Pg	Dwg	Filing	Notes
JP 8096839	A	JA	6	4		

## Alerting Abstract JP A

Separators in a positive \*\*\*electrode\*\*\* \*\*\*lead\*\*\* \*\*\*protrude\*\*\* more than negative \*\*\*electrodes\*\*\* by thickness of a negative \*\*\*electrode\*\*\* in a \*\*\*laminated\*\*\* state.

USE - Used as powder source for portable electronic appliance, such as 8mm video, audio appliance, cellular phone and lap-top computer.

ADVANTAGE - Prevents short circuit between electrodes due to contact of the lead and the negative electrode.

## Documentation Abstract

Separators in a positive \*\*\*electrode\*\*\* \*\*\*lead\*\*\* \*\*\*protrude\*\*\* more than negative \*\*\*electrodes\*\*\* by thickness of a negative \*\*\*electrode\*\*\* in a \*\*\*laminated\*\*\* state.

USE-Used as powder source for portable electronic appliance, such as 8mm video, audio appliance, cellular phone and lap-top computer.

ADVANTAGE-Prevents short circuit between electrodes due to contact of the lead and the negative electrode.

## Class Codes

International Classification (Main): H01M-010/38  
 (Additional/Secondary): H01M-010/40, H01M-002/26

16/34/16 (Item 16 from file: 350)  
 DIALOG(R)File 350:Derwent WPIX  
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0001333201

WPI ACC NO: 1977-72404Y/197740

Multicell lead acid battery cell structure - having single electrodes arranged to provide a multiple layer electrode

Patent Assignee: CHLORIDE GROUP LTD (CHLO)

Inventor: SNOOK J C

Patent Family (2 patents, 2 countries)

Patent Number	Kind	Date	Application Number	Kind	Date	Update
US 4051304	A	19770927	US 1976659894	A	19760220	197740 B
GB 1533116	A	19781122				197847 E

Priority Applications (no., kind, date): GB 19757489 A 19750221

Alerting Abstract US A

The battery has multiple cells each having single electrode lead support structures of respective polarity separated by a separator. Each electrode support has an integral portion extending out to a respective side of the cell and connected to, or integral with, an electrode support of the adjacent cell, or a battery terminal. The cells are arranged to provide an array of multiple layers of electrodes of alternating polarity.

Provides a battery with improved performance characteristics.

Class Codes

(Additional/Secondary): H01M-002/24, H01M-004/00

US Classification, Issued: 429094000, 429149000, 429160000

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